THE

LARYNGOSCOPE.

VOL. XX. ST. LOUIS, NOVEMBER, 1910. No. 11.

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

A CLINICAL STUDY OF INFECTIOUS DISEASES OF THE LABYRINTH.

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(Translated by Dr. M. A. Goldstein, St. Louis.)

PART I.

The most important recent results in operative otology have been especially directed toward the ever-increasing recognition of the symptomalogy and pathology of labyrinthine suppurations. The great interest that has been generally taken in suppurations of the labyrinth is due as much to the advances in the physiology as to the more intimate topographic relations of this organ to other vital areas; a suppurative process of the labyrinth may not only destroy one of the sensory organs, but the peculiar location of the pyramid plays an important rôle in the extension of the suppurative process of the middle-ear to the cranial fossæ. The purpose, therefore, of the diagnosis and therapy of labyrinth suppurations is to maintain the functional integrity of the labyrinth and to guard against serious intracranial complications of labyrinthine origin.

Notwithstanding this unusual interest in this important field of otology there are many clerical and therapeutic problems which have not yet been thoroughly explained; this is especially due to the variability of the clinical aspects of labyrinthine suppurations.

This variability in the clinical development of labyrinth suppurations is not only dependent on the activity or chronicity of middle-ear inflammations, but especially on the etiology of these affections,

and even more on their method of extension. Not least important is the basteriologic cause.

The many phases in the progress of this affection is comprehensible and justifiable when we consider that a labyrinth suppuration resulting from an acute otitis media may often begin as an acute process, and then assume a chronic form; or, it may be ushered in as a chronic form and may eventually exacerbate as an acute process; or a labyrinth suppuration following chronic otitis media may begin acutely and develop as a chronic form, or vice versa.

The acute as well as the chronic course of labyrinth suppurations may be circumscribed or diffuse, dependent on the extension of the suppurative focus.

This classification is justifiable only when such retrogressive changes in the vicinity of the pus focus (such as coagulation of the endolymph, hemorrhage, edema, even though these may temporarily injure the labyrinth), do not affect it. The termination of labyrinth suppuration is as variable as its origin and course. These affections may result in death, in a few days or may recover after months with or without operation independent of the fact that their conception was of the acute or chronic, circumscribed or diffuse type.

The penetration of pus into the labyrinth may have the following results: 1. Cessation of all symptoms and restitutio ad integrum. 2. Cessation of all symptoms and recovery, but total destruction of the functions of the labyrinth. 3. Increased activity of symptoms and exitus letalis, due to diffuse suppurative meningitis or to other intracranial complication.

To determine the extension and course of a suppurative labyrinthitis, the operative exposure of the middle-ear cavities and the changes that may be observed on the inner wall of the cavum tympanum (such as an erosion of fistula) are insufficient because they offer no evidence whether the suppuration involves only a part of or the entire labyrinth. Changes found during the radical operative exposure of the tympanic wall of the labyrinth may arouse doubts as to the penetration of pus from the tympanic cavity into the labyrinth. Even serious lesions of the labyrinth wall, such as carious necrotic areas, do not justify us in completely destroying the functions of the labyrinth, as experience has shown us that under some circumstances the endostium of the labyrinth has enough resistence to prevent the penetration of infectious micro-organisms into the interior of the labyrinth. Again, we have found that a suppurative

process may be limited to a circumscribed segment of the labyrinth, in which case their will be only a partial loss of function. These data justify the generally accepted statement that the clinical picture of labyrinth suppuration can only be substantiated by the relation of the changes found on the inner wall of the cavum tympanum and an exact functional examination.

The clinical picture of labyrinthine suppurations is characterized by symptoms that may be traced to unusual conditions and stimulation of the nerve end-apparatus; these symptoms have their origin in the labyrinth. In acute cases a slight rise in temperature occurs in addition to the above; this symptom, however, is only of diagnostic value when its origin from all other sources may be excluded. The rise in temperature is also of great importance, for, if in the course of a suppurative labyrinthitis a marked rise in temperature is accompanied by a rigidity of the neck, limitation of head-motion, localized or diffuse headache, the infection has probably spread to the meninges.

PART II.

Those symptoms arising from the cochlear apparatus have, *per se*, no pathognomonic value, as the cochlea may have already been injured because of the middle-ear suppuration, i. e., in the sense of a non-suppurative process; for this reason only, the relation of the cochlear apparatus to the vestibular symptom-complex justifies us in expecting data from the functional tests alone for a diagnosis of suppurations of the labyrinth.

Injuries of the cochlea developed during labyrinth suppuration are associated with diminution of hearing, more often, however, with complete deafness and tinnitus. These conditions are very similar to those of labyrinthine deafness; i. e., a tuning-fork placed medianly on the vertex is lateralized in the better-hearing ear; bone conduction is partially or totally absent. To substantiate this observation the following tuning-fork test is recommended: A sounding tuning-fork placed over the mastoid process of the ear to be examined is no longer heard when that ear is plugged, but is distinctly heard when the healthy ear is closed with the finger-tip. By this tuning-fork test we can determine how much bone-conduction is perceptible by the affected and by the healthy ears respectively. The application of the tuning-fork by air-conduction for diagnosis of labyrinthine deafness is only of

value when we consider that from middle C up a gradual increase of tone-duration occurs because of the transmission of such sound to the healthy ear.

Deafness resulting from labyrinth suppuration may occasionally be diagnosed as such because of its relatively rapid development. This is usually only to be expected in cases of acute otitis, for middle-ear suppurations which have a pathologic-anatomic basis for the development of a chronic suppurative labyrinthitis, such as cholesteatoma, polyp-formations or tuberculosis, may have previously disturbed the functions of the cochlea, even though not in the sense of a suppurative process, but before a distinct suppurative labyrinthitis occurs.

If we consider that the changes in the cochlea, as previously observed, may under certain conditions, be capable of reconstruction, it is not sufficient for diagnosis to determine the degree or form of cochlea lesion alone, but also its possibilities of repair and operative indications.

Especially for this class of cases an exact examination of the vestibular apparatus is imperative; in this we must not be satisfied with only the spontaneous vestibular symptoms, such as vertigo, nystagmus, disturbances of equilibrium and vomiting, but it is necessary to carry out an exact test of the vestibular apparatus for caloric, galvanic and turning nystagmus. Those cases of labyrinth suppuration in which the tested vestibular symptoms predominate we would classify as the active form as distinguished from the latent type of suppurative labyrinthitis; in the latter form only minute functional tests can determine to what extent the vestibular apparatus has been destroyed. It may be emphasized that the form of vertigo accompanying these vestibular stimulations and exclusion symptoms, is of the turning variety.

The patient experiences the sensation either of being turned or of the surrounding objects turning about him, in the direction of the quick component of his nystagmus. Vertigo is intense only in the early stages and usually manifests itself in a swaying toward the affected side in cases of total destruction of the vestibular apparatus, and by a swaying to the healthy side in cases of circumscribed lesions. In the latter stages disturbances in equilibrium can only be determined by special experiments; walking backwards or hopping with eyes closed, seem best adapted for this experiment. The form of nystagmus most frequently found in suppurations of the labyrinth is the rotary type, with the quick component directed to the

healthy side; during the most active phase of this affection, in all directions, and in the further development the nystagmus can only be observed in the direction of the quick component. As all these symptoms disappear entirely in the course of time, only an exact functional test of the vestibular apparatus will prove to us the altered condition of this organ: we should add that the history of the case will be insufficient because the functions of the vestibular apparatus may have been destroyed without vertigo, nystagmus or disturbances of equilibrium having taken place. This latter condition is not infrequent for numerous cases of labyrinth suppuration existing since childhood or those in gradually developing phthisis have occurred without the exhibition of these symptoms.

PART III.

The various methods of investigations available for determining the functions of the vestibular apparatus are based upon the fact that it may be stimulated not only by adequate physiological stimuli but also by caloric and galvanic reaction and by air-rarefaction and air-compression in the external auditory canal. The vestibular apparatus may thus be stimulated by such manipulations if it has not already lost its functions as a result of disease of the end-organ or of the nerve. The vestibular apparatus responds to these stimuli with marked nystagmus, vertigo and disturbances of equilibrium, and it is the presence of these symptoms which makes it possible, even when other symptoms are absent, to thereby determine the condition of the vestibular apparatus. If we conclude from the final clinical data (often not experimentally verified), that the nystagmus proceeds from the stimulated ear, it will not be difficult to assume the direction of the nystagmus brought about by thermal or galvanic irritation.

As the kathode stimulates the nerve to the highest degree, and the anode produces the opposite effect, it is clear that in a labyrinth still susceptible to stimulation, the nystagmus is always directed toward the kathode if the vestibular apparatus, which is under the influence of the kathode, can be stimulated at all. The converse is observed with the anode applied to the ear that is examined. Thermal stimuli are produced by syringing the ear, which we wish to examine with hot or cold water. The direction of the nystagmus, when cold water is used, will be to the unsyringed ear: when hot water is applied, the nystagmus occurs in the direction of the syringed ear—that is, when the vestibular apparatus is still capable of functioning. The variously-produced disturbances of the

endolymph in the labyrinth explain the fact that the temperature of the water influences the direction of the nystagmus.

It should be observed that the nystagmus occurs in the direction of the quick component, even though this is of cortical and not of vestibular origin. Mention must also be made of the fact that the vestibular apparatus, even when it no longer responds to caloric or physiologically adequate rotation-stimuli, may still exhibit a partially preserved function, demonstrated by a slow ocular motion when air-compression or air-rarefaction is used.

These functional tests make possible not only the diagnosis of labyrinthine suppuration, but also establish the fact as to whether the pathologic process involves the labyrinth wholly or partially. We accordingly classify labyrinth suppuration as circumscribed or diffuse. These data might lead us to suppose that the differential diagnosis between circumscribed and diffuse labyrinthitis may be made in every case, which, however, is not true, for, in those cases where pus has penetrated the labyrinth suddenly and not gradually, not only that part of the labyrinth attacked by the pus, but the adjacent parts, even though only temporarily, may lose their functions. This status may erroneously lead us to diagnose a diffuse labyrinthitis, where in fact only a circumscribed process exists.

In those cases of labyrinth suppuration, however, where the process extends from the middle-ear into the labyrinth by gradual breaking-down of the wall of the labyrinth, the process at this point may be localized while the remainder of the labyrinth may remain intact.

It is an important clinical fact that such a circumscribed process remains localized only until an acute exacerbation diffuses it. Such acute processes may be brought on by a slight rhinitis, angina or, what is of more importance, by intra-tympanic inroads, such as the removal of polypi or ossicles, or following the radical operation, which may be a serious procedure where labyrinth suppuration simultaneously exists.

An indication for operation which must not be undervalued is the fact that not every circumscribed labyrinth suppuration must become a diffuse one, because the intact portion of the labyrinth may be protected by firm adhesions until the diseased part of the labyrinth will have entirely and spontaneously healed. To make this possible, the primary pus focus in the middle-ear must have been eliminated. An invaluable symptom in the diagnosis of labyrinth suppuration is the accompanying facial paralysis, which

is, in itself, an indication of the extent and progress of the suppuration from the middle-ear to the labyrinth wall.

PART IV.

Otoscopic examination offers data for the diagnosis of labyrinth suppuration in exceptional cases only. Broad-based granulation-masses on the promontory, fistula determined by probe or by air-rarefaction and air-compression, loss of the stapes, the presence of sequestræ of the labyrinth—all are aids in establishing a diagnosis of labyrinth suppuration only when considered in conjunction with the functional tests.

Even the anatomic findings following operation are in themselves insufficient evidence, as even extensive invasion of the labyrinth wall, such as carious or necrotic areas, do not justify the conclusion of destruction of the labyrinth, because experience has shown us that the endo-labyrinthine area may offer sufficient resistence to prevent the penetration of infectious organisms into the interior of the labyrinth. We have also found that purulent infection, as above-mentioned, may be restricted to a circumscribed segment of the labyrinth, in which case the functional loss in the labyrinth will also be only a partial one.

In some cases the anatomic findings following operative exposure of the middle-ear areas disappoint us as to the condition of the inner tympanic cavity wall, especially because the avenues of infection may be of microscopic character, or may be located in positions on the labyrinth wall inaccessible to the eye. In these cases also, as well as those where we find extensive destruction of the inner tympanic cavity wall, only the association of the functional tests with these changes in the inner tympanic cavity wall will afford conclusive data for the diagnosis of labyrinth suppuration.

If not diagnosed at this stage, the post-operative course, following radical operation, and the process of healing will give us more tangible data, as the labyrinth affection, until now latent and without symptoms, determined during operation, may change the circumscribed labyrinthitis to a diffuse one; or, if not yet demonstrable, the healing process, if a suppurative labyrinthitis exists, is disturbed by too profuse granulations and delayed epidermization.

The fact that there may be avenues of infection in the inner tympanic cavity wall invisible to the eye, emphasizes the importance of diagnosing fistulæ of the semi-circular canals by means of air-

rarefaction and air-compression, an integral part of the functional test.

The diagnosis of suppurative labyrinthitis is generally determined by symptoms in the cochlear and vestibular apparatus in conjunction with direct or indirect evidences of anatomic changes of the inner tympanic cavity wall, but in considering the indications for operation we must observe the character, the area involved and the tendency to extension of such a process.

PART V.

Where indications for opening the labyrinth exist it is a matter of great importance to decide whether the labyrinth should be operated simultaneously with the radical mastoid operation or whether the labyrinth operation should be undertaken some time after the radical operation has been performed, as no definite indications existed at the time of the mastoid operation.

Simultaneous operation of the labyrinth is indicated in all cases where diffuse suppurative disease of the labyrinth has been confirmed by diagnosis. If this cannot be determined with absolute certainty, the presence of intracranial complications of labyrinthine origin is sufficient indication for the labyrinth operation.

In circumscribed disease of the labyrinth the indications for operation depend on whether or not the circumscribed process may spontaneously heal after the radical operation, for, if this is not possible, it is advisable to open the labyrinth, as there is danger of very protracted or no healing of the wound-cavity produced during the radical operation and the patient, during all this time is constantly troubled and must even give up his occupation because of the continued labyrinth suppuration, and the symptoms, especially those of vestibular character, are continued until the circumscribed diseased area of the labyrinth has healed, or until the functions are destroyed by gradual involvement of the entire labyrinth.

The methods of operation for opening the labyrinth may be divided into (a) tympanic and (b) retro-tympanic.

The tympanic method, as carried out by Hinsberg, Bourges, Botey, consists of opening the prominence of the external semi-circular canal by means of chisel or drill after the radical operation has been made, as a fistulous opening already exists in this area in the majority of cases. After carefully cleansing the area of the promontory a counter-opening is made by removal of the lower rim of the oval window with chisel or drill after extraction of the stapes if it is still present. This produces an opening in the lateral

wall of the pyramid, which is divided by the bony canal of the facial nerve into two irregular parts, of which the smaller part is located above, and the larger vestibular part below the facial nerve. This method of opening the labyrinth is easy and generally safe. The facial nerve, however, must here be very carefully watched, as the various technical manipulations during the operation are in such close proximity that it may be easily and is frequently attacked. The bony facial canal may also be made more brittle in consequence of the existing suppurative middle-ear process. This method of operation on the labyrinth simply opens the areas of the labyrinth and makes possible the discharge of its contents outwardly, but does not prevent the possible progress of the process along the posterior wall of the pyramid to the interior of the cranium. In this operation intra-cranial complications existing on the posterior wall of the pyramid are not exposed; furthermore, when we consider that an abscess in the cerebellum may present the same symptoms as a suppurative labyrinthitis, it is clear that we are justified only after positively excluding the diagnosis of labyrinth suppuration to properly estimate the symptoms before us as a pro-or non-indication of cerebellar abscess. The absolute exclusion of the labyrinth, however, is not certain in this operation.

The retro-tympanic operation on the labyrinth, as I perform it, is far more reliable from every point of view. This operation is more easily accomplished if the dura of the posterior cranial fossa lying above the pinus, is exposed before the removal of the posterior wall of the pyramid is undertaken. Even though the operation is more easily accomplished by exposing the dura of the posterior cranial fossa; this is by no means absolutely necessary in all cases. In those cases where the mastoid process lies deep and is filled with pneumatic cells, the labyrinth may be opened by removal of the posterior wall of the pyramid, without exposing the dura of the posterior cranial fossa, as I have done in many cases.

Layer after layer of bone, parallel with the posterior pyramid wall, is removed by chisel, and exposes two openings to view. The upper opening is the cross-section of the crus commune of the superior and posterior semicircular canal; the lower opening is the cross-section of the posterior semicircular canal near its ampulla. Both openings are round and are near the median wall of the labyrinth, and when examined with a curved probe we find that they do not lead into the vestibule by the shortest route. By continued chiseling of the posterior wall of the pyramid, layer after layer, a third opening is exposed, which is somewhat elongated

and oval, and in its long axis lies between the former two openings, about in the center, but somewhat more anteriorly. This is a cross-section of the horizontal semicircular canal. By gradually enlarging this opening, which, by former probing, has been found to be the shortest way to the vestibule, the vestibule is opened posteriorly. By chiselling away the ledge of bone on the posterior wall of the pyramid the lateral boundary of the internal auditory canal is also successively removed and the internal auditory canal exposed, which is of extreme importance, as shown by the histo-pathologic investigations of Politzer, who found that the suppurative process may often lie buried in the internal auditory canal without any symtomatic evidence. In all of these manipulations it is imperative that the operation be performed in lines parallel to the posterior wall of the pyramid. A deviation in an upward direction may injure the superior petrosal sinus, a deviation downward may injure the jugular bulb, and the removal of the posterior wall of the pyramid anteriorly may endanger the facial nerve.

The injury to the dura of the posterior cranial fossa, sometimes unavoidable in performing the retro-tympanic operation of the labyrinth, is not dangerous when not made too small.

The operation is concluded by the opening of the promontory after thoroughly cleansing the middle-ear cavities; in this care must be taken not to injure the facial nerve, carotid artery and jugular bulb. When the operation is completed, a curved probe may be passed from the posterior surface of the pyramid to the tympanic cavity to prove that the major portion of the labyrinth has been removed.

PART VI.

After the operation has been completed the dura must be carefully examined for possible tear or injury, for, if such a tear is found it is advisable to enlarge it. A strip of iodoform gauze is loosely packed in the retro-labyrinthine cavity; a second gauze strip is placed in the tympanic cavity. The retro-auricular area remains open until the retro-labyrinthine cavity has been completely filled with granulations. Healing occurs promptly, as the exposed dura has a great tendency to granulate, and in a comparatively short time the retro-labyrinthine cavity fills with granulations proceeding from the dura. It is then advisable, if, for other reasons, spontaneous healing is not desired, to close the wound by secondary suturing.

VIII Schlosselgasse 28.

OSTEO-MYELITIS OF THE TEMPORAL BONE.*

BY CHARLES W. RICHARDSON, M. D., WASHINGTON, D. C.

On November 12, 1903, I presented a paper before the Section on Otology of the New York Academy of Medicine, on the subject of Acute Osteo-Myelitis of the Temporal Bone. Since writing the above-mentioned paper, I have not encountered another case of this unusual form of suppurative inflammation of the temporal bone until this winter. This case lacked the marked local symptoms of osteo-myelitis, that is, the extensive area of local tendencies, but presented in a marked degree all of the profound constitutional evidences.

A young boy, 10 years of age, was admitted to my service at the Episcopal Eye, Ear, and Throat Hospital, February 17, with the following history: He was an inmate of the Industrial Home School. Three weeks before his admission to the hospital, he had had a severe attack of acute bronchitis, from which he was convalescing, when he was seized with sharp pain in the left ear. On the third day following the initial ear symptoms, he was brought to the hospital. I saw the patient shortly after his admission. He was a pale, fragile child, undersized and underweight for his age. He had the appearance of being very sick; very intelligent, non-complaining, and very quiet. On examination of his ear, I found the membrane to be very lividly congested and bulging; necessitating immediate opening. The temperature was 103°, at this time. The exudation from the middle-ear followed the usual course, but was never abundant. The temperature showed a distinctly fluctuating character for the following 4 or 5 days. The patient had the appearance of a very sick child, kept very quiet, talked very little, and never complained; quickly complying with every request made of him. There was no mastoid tendencies until the fourth day, when fair pressure over the antrum and at the tip of mastoid caused evidences of pain. A leucocyte count gave 11,700 white cells. On the fifth day, February 22, the mastoid tenderness now being very great and extending over the whole area of the mastoid, the mastoid operation was immediately performed. It was noticed that the cortex had a peculiar bluish-white appearance. On chisel-

*Read at the Meeting of the American Otological Society, Washington, D. C., May 4, 1910.

ing through the cortex into the cells, the peculiar friable nature of the bone was noted, there was an absence of the brittle firm feel of the healthy cortex. The mastoid contents had a grayish-white appearance which is spoken of as the shaven beard appearance, and all the small cells were filled with pale granulating tissue. There was no pus demonstrated anywhere, not even in the antrum. That peculiar characteristic of osteo-myelitic bone imparting the sensation as though you were cutting through wet blotting-paper was maintained throughout the mastoid. It seemed almost impossible to reach firm, hard, healthy bone in any direction. The patient was returned to the ward in good condition. The following day found the patient in about the same condition, with the temperature showing a more distinctly septic wave. Blood count demonstrated 100 less white cells than on the previous count. Drs. Acker and Wood were carefully following the case from the internist's point of view. They could find nothing to account for the continued sepsis and were strongly inclined to believe that the lateral sinus was infected. This did not coincide with my views. On the evening of February 25, unwillingly, I decided to expose the sinus. On exposure, the sinus appeared normal, but in order to have no uncertainty upon this point, I opened the sinus, but found no evidence of clot. On February 27, the patient developed pneumonia and died on the morning of February 28, 11 days after his admission to the hospital.

The autopsy was made by Dr. L. Z. Glazebrook. The autopsy findings demonstrated changes in the organs in which diseased conditions had been recognized before death. There was evidence of a recent pneumonia in the upper lobe of the right lung and a plastic exudate in the pleura of the left side. The brain and its membranes showed no pathological change whatsoever. The most interesting autopsy manifestation was in connection with the temporal and sphenoid bones, the temporal bone throughout the whole pyramid presented the same condition as had been noted in the operation on the mastoid. It was so soft and friable that it was found impossible to remove it in its entirety. The sphenoid bone presented the same identical condition as the temporal bone.

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PRELIMINARY PATHOLOGICAL AND CLINICAL REPORT OF A CASE OF EXFOLIATION OF THE BONY TYMPANIC WALL INCLUDING THE MAJOR PORTION OF THE SEMI-CIRCULAR CANALS.*

BY J. A. STUCKY, M. D., LEXINGTON, KY.

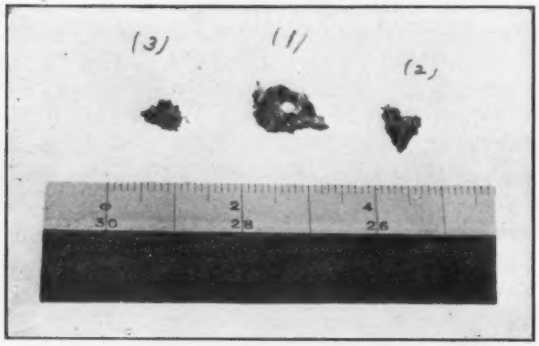
Eugenia W., a negress, aged 7 years, was admitted to the Good Samaritan Hospital on January 18, 1909. Parents said she had had a running left ear since babyhood. For the previous 3 or 4 months, there was a swelling behind the ear which from time to time had opened spontaneously and discharged freely. The child was emaciated and anemic and gave evidence of syphilis and tuberculosis. Examination showed large tonsils and adenoid and facial paralysis of the left side, profuse discharge from the auditory canal, swelling behind the ear and a fistulous tract which led into the antrum. The following day the mastoid was opened and the entire process was found soft and necrotic, the outer wall of the antrum, the entire middle-ear and attic were filled with pus and granulations. The radical tympano-mastoid operation was done. The sinus was exposed but not opened; no ossicles were found. The entire bony lining of the middle-ear was necrotic, the tegmen tympani very soft, the dura was not exposed except through fissure in the aditus. The Eustachian tube was large and the osteum necrotic. The necrosis extended well into the cells of the zygomatic process, involving the anterior wall of the tympanic cavity. The posterior wall of the canal was very soft. The cochlea was exposed but not opened, the facial ridge was eroded but the nerve not exposed. No labyrinthine tests were made before the operation. The patient was given the open air treatment with liberal, nutritious food, with iodide of potash and mercury. Her general condition improved very much. She was allowed to leave the hospital in 6 weeks with the ear still discharging.

She returned on April 12, 1910, with complete facial paralysis with very offensive discharge of thin, greenish, yellow pus through the auditory canal. An examination with probe revealed a sequestrum of bone in the middle-ear. All the labyrinthine tests made were negative, giving no evidence whatever of vestibular semicircular canals functionating. The hearing as tested with a Lärm

*Read before the Annual Meeting of the American Rhinological, Otological and Laryngological Society, Washington, D. C., June, 1910.

apparat showed that the hearing was destroyed. There was no disturbance of the equilibrum nor nystagmus.

On April 12, 1910, the patient was again etherized and the entire inferior, posterior and superior wall of the auditory canal, also of the middle-ear, was removed with little difficulty with forceps and curette. The entire posterior wall of the middle-ear including the round window and part of the oval window, was removed in mass. The facial ridge for its entire length was carious, exposing parts of the dead nerve. The entire tip and floor of the mastoid was also carious, exposing the jugular bulb. The coverings of both the horizontal and vertical semi-circular canals were also opened



and found filled with pus. The lateral sinus which had been exposed in the previous operation was covered with firm, fibrous tissue. The orifice of the Eustachian tube was very necrotic and when curetted was found to be of an unusual size, admitting freely the largest probe. The softened anterior wall of the middle-ear was removed and the pulsating carotid artery could be plainly felt. The bone covering the posterior semi-circular canal appeared healthy.

Figure 1 is piece of bone of the posterior wall of the middle-ear containing the round window. The part of the oval window remaining does not show. Figure 2 show pieces of bone removed from the anterior, inferior wall of the middle-ear including a part of the edge of the Eustachian tube. Figure 3 is part of the covering of the lower portion of the facial canal just as it enters into the stylo-mastoid foramen.

The case shows that part of the labyrinth may exfoliate without producing any labyrinthine symptoms whatever. Recovery is complete with facial palsy.

CONCLUSION: At this time (July 21, 1910), the posterior wound is entirely closed and the child seems to be in good health, the facial palsy remaining unchanged. The labyrinthine tests are negative. The patient will be kept under observation and tests made from time to time and a report made at the next meeting.

45 McClelland Building.

Present Status of Vertigo Considered from a Diagnostic Standpoint. G. E. DAVIS. *Jour. A. M. A.*, Oct. 8, 1910.

After a lengthy histological introduction, Davis reaches the following conclusions: The internal ears are the special sense organs of equilibrium. By them we recognize (orientation) and maintain our relations to space (equilibration). The visual sense organs and the kinesthetic sense organs (the muscles, etc.), are accessory sense organs of equilibrium and are co-ordinated with the internal ears through the mediation of the cerebellum. The special sense organs, the two internal ears, one on each side, are normally symmetrical in structure and function, and anything, whether physiologic, experimental or pathologic, which innervates, stimulates or irritates one of these twin organs more than the other, or accomplishes the same thing through enervation, depression or destruction of one in excess of the other, in that measure tends to or creates proportionally disturbance of their joint function, equilibration. If this disturbance is sufficiently marked or intense, we also get nystagmus and vertigo. Davis admits that the complex labyrinthian function of equilibration and orientation is far from being completely understood, and that disorders of its apparatus manifesting themselves in vertigo, nystagmus and disequilibration are also to a large extent unexplained.

BACTERIOLOGICAL EXAMINATION OF THE TONSILLAR CRYPTS AT THE MANHATTAN EYE, EAR AND THROAT HOSPITAL, NEW YORK, DURING WINTER, 1909-10.*

BY J. G. DWYER, M. D., AND MISS GIGNOUX, NEW YORK.

During the last winter months from November to April, an investigation of the bacterial flora of the tonsil was made in order to determine the varieties of bacteria present, during this season of the year, and especially in order to detect the presence of bacteria of perhaps latent pathogenicity in healthy throats.

The especial object in view was to determine the relation, if any, between the bacteria found in the tonsils, and the atmospheric conditions, such as temperature, humidity, prevailing wind, etc.

Early in the investigation, however, it was seen that this object was impossible of accomplishment, as from a comparative study of the atmospheric conditions and the bacteria isolated, no deductions could be drawn.

The procedure followed in obtaining the cultures was as follows: A platinum spoon-curette was sterilized in the flame, and was then inserted deep in the tonsillar crypts, so as to get the material deep down in the crypts. Cultures of this material were then made on various media. After experimenting with the various media, we found that the most complete results were obtained by taking two cultures from each case, one culture on a tube of Löffler's serum to promote the growth of bacteria belonging to the diphtheria family, the diphtheroid group, and the second on a plate of glycerine-glucose agar, to which a drop of blood had been added to make possible the growth of the influenza bacillus, and at the same time to facilitate the differentiation of the streptococcus family.

After incubating these cultures for twenty-four hours at 37.5° C., smears were stained from the Löffler's serum tube and two smears from the glycerine-glucose agar plates, one of these being taken from the growth on the drop of blood serum and the other from the growth on the plain part of the plate, where the blood serum was not present.

In most cases one smear from each culture was stained with Gram's stain, and in addition a smear from the blood was stained for three minutes with heated carbol fuchsin in order to show up the influenza bacillus. If the Gram stain showed the presence of elongated diplococci, a smear was then stained for capsules by

*From the laboratory of the Manhattan Eye, Ear and Throat Hospital, New York City.

flooding the slide with carbol fuchsin and examining in water. The separate colonies were then fished for and transplants made on agar, blood agar, and Löffler's serum, as the occasion warranted, and the cultures thus isolated, were further investigated on appropriate media. All strains of round streptococci were grown on blood-agar in order to test their hemolytic powers.

Of the seventy-two throats examined one or more strains of round streptococci were isolated from fifty cases, and of this large percentage only three strains produced complete hemolysis. Out of these three cases, one case had acute tonsillitis. In both of the other cases, the chains were long and the growths in both showed hard, compact masses instead of turbidity.

The non-hemolytic strains varied in length from 8 to 30 or 40. The majority belonged to the short-chained variety and clouded the broth.

In twenty-one cases very long chains, composed of elongated diplococci, were found, and in three of these cases the diplococci showed capsules. In seven cases, a peculiarly irregular streptococcus was found, the chains of which were long and composed of pairs. Some of these pairs were thick and stained heavily, while others hardly took the dye at all and were either thin and elongated or very small. Forty-nine cases had one or more forms of Gram positive biscuit-shaped diplococci and twelve showed the Gram-negative micrococcus catarrhalis. Twenty-eight cases showed small, pointed diplococci without capsules. Six cases showed large, pointed diplococci without capsules. Fourteen cases showed a feebly growing capsulated, pointed diplococcus, the pneumococcus. Four cases showed diplococcus mucosus capsulatus. Sixteen cases had some strain of the diphtheria family, ranging from the true Klebs Löffler bacillus to the exuberantly growing pseudo-diphtheria. One case in which the true bacillus was found developed an attack of diphtheria in a couple of days and should therefore be excluded from the statistics.

Staphylococcus was isolated in twenty cases. Three of these cases showed staphylococcus alone, but this was probably due to its vigorous growth, which prevented other bacteria from developing. The bacillus pyocyaneus and Friedlander's bacillus were each found, but once; large bacillus with spores, three times; Gram-negative streptococcus, two times; tetracococcus, once; spirillum, once; long curved bacillus, once; short bacillus, once. The pneumococcus appeared five times alone, four times with a diphtheria form, twice with a hemolytic streptococcus, once with the diplococcus mucosus

capsulatus, and twice with the influenza bacillus. Some member of the diphtheria family appeared eleven times alone, four times with the pneumococcus and once with the diplococcus mucosus capsulatus. The influenza bacillus appeared three times alone and twice with the pneumococcus. This small percentage of influenza bacilli was surprising, as we had entertained the idea that the influenza bacillus is present in the throat in a much larger number of cases than is generally supposed. However, the number of cases of influenza reported in New York City last winter was far below the average.

The above results are in keeping with the findings of others. Davis of Chicago examined forty-five throats, and in almost every case a pure culture of streptococcus pyogenes was obtained in the materials from the crypts.

A comparison of the findings of others with regard to the diphtheria bacillus is interesting. Lemoine found the bacillus present in 22 per cent of eighty-six entirely healthy throats. Allowing for the case that developed diphtheria clinically, we found some member of the diphtheria family present in fifteen cases or 23 per cent. Of these five were proven to be true Klebs Löffler bacillus, five the pseudo-form, and five were undetermined.

This latter analysis would materially reduce our percentage of true diphtheria bacilli.

Ceredein and Isonin examined the naso-pharyngeal mucus from the throats of 195 apparently normal children from a school in a section where diphtheria had occurred. Thirty-two were positive, or 17 per cent of these, twelve were proven virulent. Also, the same investigators examined 112 cases in classes in which there had been no diphtheria for two years; seventeen cases were positive, or 15 per cent.

Briefly recapitulated, the numbers of varieties present in the individual cases ranged from one to seven. From nine cases, only one variety was isolated; from ten cases, two varieties; from twenty-three cases, three varieties; from eighteen cases, four varieties; from nine cases, five varieties; from three cases, six varieties; and one case showed seven distinct varieties.

The following tables show how often the more well-known varieties of micro-organisms were isolated, and also the number of times these organisms were found together in the same tonsils:

Streptococcus, round, 50; streptococcus, hemolytic, 3. streptococcus, diplo-form with capsules, 3; streptococcus, diplo-form without capsules, 18; streptococcus, irregularly staining, 7; staphylococcus,

20; pneumococcus, 14; diplococcus, large lanceolate form, 6; diplococcus, small lanceolate form, 28; diplococcus, mucosus capsulatus, 4; coccus, Gram (+), biscuit form, 49; tetracoccus, 1; bacillus, influenza, 5; bacillus, diphtheria, 16; bacillus, pyocyaneus, 1; bacillus, small Gram (—), 1; bacillus, Friedlander's, 12; bacillus, catarrhalis, 12; bacillus, Gram (—), thin, 7; bacillus, spore-bearing, 1; bacillus, long curved, 1.

1. Streptococcus, alone, 2; with lanceolate diplococcus, 28; with Gram (+), biscuit form coccus, 39; with staphylococcus, 13; with diphtheria bacillus, 12; with pneumococcus, 13; with catarrhalis bacillus, 10; with Gram (—) thin bacillus, 7; with influenza bacillus, 5; with diplococcus mucosus capsulatus, 4.

2. Gram (+) coccus (biscuit form), alone, 3; with Lanceolate diplococcus, 21; with staphylococcus, 12; with diphtheria bacillus, 10; with pneumococcus, 11; with catarrhalis bacillus, 11; with Gram (—) thin bacillus, 6; with influenza bacillus, 4; with diplococcus mucosus capsulatus, 3.

3. Lanceolate diplococcus, with staphylococcus, 8; with diphtheria bacillus, 6; with pneumococcus, 1; with catarrhalis bacillus, 2; with influenza bacillus, 4; with Gram (—), thin bacillus, 3; with diplococcus mucosus capsulatus, 3.

4. Staphylococcus, alone, with diphtheria bacillus, 4; with catarrhalis bacillus, 1; with Gram (—), thin bacillus, 4; with pneumococcus, 1; with diplococcus mucosus capsulatus, 1.

5. Diphtheria bacillus, alone, 1; with catarrhalis bacillus, 2; with Gram (—) thin bacillus, 1; with pneumococcus, 7; with diplococcus mucosus capsulatus, 1.

6. Pneumococcus, with catarrhalis bacillus, 5; with Gram (—), thin bacillus, 2; with influenza bacillus, 1; with diplococcus mucosus capsulatus, 1.

7. Catarrhalis bacillus, with Gram (—), thin bacillus, 2; with diplo-mucosus capsulatus, 1.

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40 East Forty-first Street.

A CASE OF SUBCUTANEOUS SURGICAL EMPHYSEMA. AN UNUSUAL COMPLICATION FOLLOWING THE REMOVAL OF FAUCIAL TONSILS.*

BY BENJAMIN D. PARISH, M. D., PHILADELPHIA.

A. B., male, aged 28, married, was first seen by me last June about ten minutes after an operation for the removal of faucial tonsils, under ether anesthesia; tonsillotome and tonsil punch being the instruments used.

I was hurriedly summoned to see this patient because of alarming symptoms developing while being carried from the operating-room.

The operator, who has kindly permitted me to report this case and to whom I am indebted for some of the following facts, stated that the patient left the operating table in good condition, and that there was nothing unusual about the operation, except possibly more bleeding than usual. In dissecting the tonsils free a small right-angle knife was used. The tonsils were quite adherent, and in freeing them a small button-hole was made in the lower part of the posterior pillar of the faucies on the left side. The orderly and nurse noticed on the elevator that the patient seemed to be struggling to breathe, and also that his neck and face were swelling rapidly, and immediately summoned the resident and operator.

When I first reached the case the breathing was rapid and shallow; pulse about 128 and thready; face livid and lips cyanosed; his head and neck were extended far back and quite rigid; skin cold and moist. The entire neck puffed out so that the line of the jaws were practically obliterated, both cheeks and right eye-lid swollen, and the crackling of emphysema easily detected over this entire area as far down as the last rib anteriorly, but none posteriorly.

After prying open the jaws, putting on a tongue-forceps and bending the head and neck forward the general condition became rapidly better. Stimulants and enteroclysis were administered.

It was noticed that the emphysema which had been increasing with the neck in the extended position remained stationary when flexed. An examination showed no evidence of any injury to the larynx or trachea. The faucial tonsils had been well removed.

*Read before the meeting of the Laryngological Section of the College of Physicians, Philadelphia, May 18, 1910.

There was a small button-hole in one left pillar, as before mentioned.

No hemorrhage or unusual condition of the pharynx was seen. The small blood-clots at the field of operation were not removed. The nares showed no signs of injury. Dr. D. J. McCarthy, who was called in at the same time, stated the chest condition to be negative. The patient rallied from the shock, his respiration became again normal, and in about three days the emphysema had been absorbed from neck and face, though it took two weeks to disappear from the chest. The patient made an uneventful recovery.

What appealed to me of interest in reporting this case was, first that subcutaneous emphysema was an unusual complication of tonsil operations, and, secondly, just how the air got into the subcutaneous tissues. As a complication, I have been unable to find any case so reported in the last ten years.

F. STEWART, in the *Lancet*, for November 15, 1902, reports a case of blood extravisation into the subcutaneous tissues of the neck, cheeks and sternum, twenty-four hours after removal of the faucial tonsils from a boy 7 years old, death resulting. A. S. Woodwark, in the *Brit. Med. Jour.*, London, 1908, reports a case of "Surgical Subcutaneous Emphysema" of head and neck following trauma, due to the breaking of a pipe stem and the perforation of a piece just above the anterior pillar of the faucies on one side. I mention these two cases merely to illustrate the possibility of air and blood being injected into the subcutaneous tissues by separation of the musculature and connective tissues external to the faucial tonsils.

The field of the operation in this case did not show that the operator had gone unduly deep in removing the bases of the tonsils, or in any way could he be held responsible.

The explanation of just how the air reached the subcutaneous tissues is more theoretical than demonstrable. Taking for granted that we have excluded injuries to the nose, trachea and larynx, we must look next to the field of operation as the probable portal. As we know, the tonsil lies between the palato-glossal and palato-pharyngeal muscles, and upon the superior constrictor of the pharynx. The small button-hole in one of the pillars may have been the seat of entrance, but it seems more likely that there may have been a separation of the fascia and muscles of the superior constrictor of the pharynx. Parallel to the carotid vessels, according to Gray,

a thin lamina of the fascia is given off, called the bucco-pharyngeal fascia, which closely invests the constrictor muscles of the pharynx and is continued forward from the superior constrictor on to the buccinator, and it may have been along this course that the air traveled. That the emphysema did not occur until the patient was coming out of ether was probably due to the fact, that then the mouth was tightly shut and the struggling expiratory efforts of the patient forced the air through the opening into the subcutaneous tissues. Support is added to this theory by the fact, that as soon as the mouth was kept open and the neck flexed the emphysema ceased to increase.

Such a complication as the one in this case, though uncommon, is most unpleasant as well as alarming to the operator, and emphasizes the dangerous element in tonsil operations.

In whatever way the air entered the tissues the fact remains that the patient was in a distinctly precarious condition for a short time. If the air had entered any of the mediastinal spaces the result might have been far more serious.

29 South Nineteenth Street.

Mouth-Breathing. M. A. DIEMONT. *Dublin Jour. Med. Sci.*, Sept., 1910.

This paper represents a thesis for the degree of Doctor of Medicine and is occupied for the most part with an account of the well-known causes and results of nasal obstruction. Attention is especially drawn to the naso-pharyngeal catarrh, which is so often caused by the presence of adenoids and is associated with chronic engorgement of the inferior turbinal with hypertrophy of its posterior extremity. The latter is held by the author to be a very frequent result of adenoids, and in his opinion the posterior ends must in such cases be removed at the same time as the adenoids, if complete recovery is to be procured. The catarrhal condition extends more over to the accessory nasal cavities, whose orifices become closed by swollen mucous membrane, while the secreted fluid is unable to escape and is "liable to give rise to abscess." GUTHRIE.

FOREIGN BODY REMOVED FROM THE BRONCHUS.*

BY SIDNEY YANKAUER, M. D., NEW YORK.

Male child, 16 months old, while eating peanuts, was suddenly seized with severe paroxysmal cough, which continued until child became cyanotic and vomited. Coughing and cyanosis continued, and child was brought to the Presbyterian Hospital. Physical examination showed a well-developed child, slightly cyanotic about the lips and finger-nails. Marked inspiratory dyspnea, with retraction of intercostal spaces, equally on both sides. At the beginning of inspiration there is silence, then the air rushes in suddenly. There are numerous râles. These symptoms are equally marked on both sides. On the following day, July 16, after attempts to dislodge the foreign body by inversion and spanking had failed, I was requested by the visiting physician, Dr. Bovaird, to remove it with the bronchoscope.

Under chloroform anesthesia the larynx was examined by the direct method, and no foreign body being seen there, an application of cocaine was made. Killian bronchoscope was then introduced, and when the neighborhood of the bifurcation was reached, the foreign body was seen lying across the bifurcation. It was seized in the forceps and removed through the bronchoscope. Examination then showed an additional piece of peanut lying in the right bronchus, just below the entrance. It was seized and also removed. Both bronchi were then explored, but no further pieces could be found. The bronchoscope was then removed. The first piece removed measured 12x7x4 mm., the second piece 10x8x4 mm. The time required from the introduction of the bronchoscope until its removal was about 4 minutes.

Following the operation the breathing improved and the retraction of the intercostal spaces disappeared.

On the following day the temperature rose to 102.5°; the child vomited, the vomit containing a number of peanut kernels. The stools were green, undigested, and contained many peanut kernels. A cathartic was administered. The temperature then fell to normal and the child was dismissed from the hospital a few days later.

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, May 26, 1910.

SOME OF MY MISHAPS IN SEVENTY-FIVE CASES OF TRACHEO-BRONCHOSCOPY AND ESOPHAGOSCOPY.*

BY SECORD H. LARGE, M. D., CLEVELAND.

In seventy-five cases of tracheo-bronchoscopy and esophagoscopy we have had four deaths, and it is in reference to these fatal cases and some of the troubles we have met in doing this line of work that I wish to speak, with the hope that you may be able to guard against them.

One of the greatest disadvantages we have to deal with, especially in cases of foreign body, is in not seeing the case immediately after the accident. When so much has been written within the last five years on the use of the bronchoscope and esophagoscope, it seems hard to believe that there are physicians in our large cities and its immediate surroundings who have never heard of these instruments.

One of our latest cases came from a village only twenty miles distant from Cleveland. A child 18 months old inhaled a peanut kernel; the family physician on being called, informed the parents that nothing could be done for the child, as there was no way of removing the foreign body, and that the child would eventually develop pneumonia, and in all probability die. A Cleveland physician, who happened to be in the village in consultation on another case, informed the doctor that the child should be taken to Cleveland at once for attention. The child was brought to the Charity Hospital and the kernel was removed. The operation was performed without any general anesthetic, and did not consume more than ten minutes, but the child never rallied; in fact the case was a hopeless one from the beginning, as the child was at that time in extremo. I feel certain, that had the child been seen immediately following the accident it could have been saved.

Another case, a child 2 years old, was brought to the hospital by Dr. Lindsay, from Salineville, Pa. The parents had called the doctor on account of spasmodic attack of dyspnea, which had lasted for three days. On examination he found the left lung partially collapsed on account of very little air going through the left bronchus. He made a diagnosis of foreign body in left bronchus. The parents were positive that it was impossible for the child to have inhaled a foreign body. An X-ray was taken, but was negative.

*Read before the Fifteenth Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, September 19, 20 and 21, 1910.

At the time I saaw the case, there was a well-developed pneumonia. Under chloroform anesthesia, an upper bronchoscopy was performed. The right bronchus was completely filled with a shiny foreign body. I was unable at this time to make out the nature of the foreign body, as the outer shell of the bean had been exfoliated. I saw at once to dislodge the foreign body would be fatal, as it was so large it would not enter the lumen of the tube, or even the glottis. A low tracheotomy was made, and the foreign body removed. I have here the foreign body.

After the foreign body was removed, there was a marked discharge of muco-purulent fluid from the left bronchus. At the beginning of the operation, the child's pulse was 180; at the end of the operation 160. The child died ten hours later. Here was another case that might have been saved if seen earlier.

The remaining two cases were esophageal. The first was in an adult who was unable to swallow any solid substance, in fact fluid was passed with difficulty. Dr. Crile, who referred the case to me, wished to have a specimen of the growth removed for microscopic examination. Under cocaine anesthesia I passed the esophageal tube, and just below the cricoid cartilage a large tumor, which had already become ulcerated, came into view. With a pair of cutting-forceps, I removed a small piece of the growth, as I thought, but it proved to be on microscopic examination, lung tissue. The patient died twenty-four hours later. No autopsy was permitted, so I am unable to explain why we got lung tissue. No pressure had been made on the tube in passing, and our field of operation was continually under the eye.

Dr. Jackson, to whom I stated the case, thought there might have been a fistulous opening, into which a small piece of lung tissue has been coughed.

The case was a hopeless one, as the growth certainly was malignant, and it being so extensive, operation was out of the question; but I have always felt that our manipulations may have hastened his end.

The other case was that of a child about 18 months old, who had swallowed a penny, which became lodged in the esophagus, just below the cricoid cartilage. It had been there for at least three days. Dr. Hamann made an attempt to remove it under chloroform, using an esophageal forceps, but he was unable to reach it, and referred the case to me. Without an anesthetic, I attempted to pass the small esophageal tube, but was unsuccessful; so chloroform was again given, but I was again unable to get the esophago-

scope tube into the esophagus. There seemed to be a stricture just above the cricoid, and the opening of the esophagus was very hyperemic. I was afraid to make any pressure on the tube, and had to abandon the case. Esophagotomy was advised, but as the manipulations had taken considerable time, we decided to wait until the morning before operating. The child died the following morning No autopsy was permitted; so we were unable to give the cause of death. This was the first case I had ever met in which I was unable to pass the tube.

The esophagus is without doubt one of the least resisting structures we have. One must never use any force in passing the tube; a good direct illumination must always be used, as it is very dangerous to try to pass these non-resisting esophageal tubes blindly.

I wish to cite some of the difficulties met in the different forms of anesthesia: In cases of foreign body in the esophagus of children, I think Dr. Jackson's plan is a very good one, that is, to operate if possible without a local or general anesthetic. Foreign body in the trachea or bronchi, is different, because there is great danger of the child's struggles dislodging the foreign body from a non-dangerous position to a dangerous one. For a simple examination of the larynx by the direct method, I use no anesthetic. It is easier to operate under chloroform, because the secretions are less than in ether, but in cases where ether is used, I find that a dose of atropin given before operation lessens the secretions.

Nervous shock appears quite frequently in the adult, and I think is aggravated by the use of cocaine. We have found that a dose of morphine given before the operation has a very beneficial effect.

We used to have trouble giving general anesthetics, but since we have used this apparatus, (which consists of a bottle, a double bulb and a hand tube, for administering the anesthetic) that trouble has been removed. With it the anesthetist is entirely out of the operator's way, and the end of the tube can be placed over the opening of the bronchoscope, and the ether forced in by the hand-bulb. I need not speak of the dangers of pneumonia following ether anesthesia, especially in those cases of foreign bodies of the trachea and bronchi.

While operating on one of my first patients for foreign body in bronchus, under cocaine anesthesia, I had the misfortune to have my accommodation paralyzed, by the patient coughing some mucous that was saturated with cocaine, into my eye. I had to bandage it, and work with one eye. I always wear glasses now.

I might mention in reference to the wearing of glasses, that it is very hard to keep them clear, and it is the work of one assistant to do nothing else, but warm, clean and change them.

The X-ray has been a great help in this line of work, but it has its disadvantages; it has not shown the presence of 50 per cent of the foreign bodies that I have met with in my work. Peanut kernels, corn, beans, peas or peanut shells, are not shown. Sometimes a false shadow appears on the plate, and misleads one.

The laryngologist, as a rule, has lots of trouble in operating at a strange hospital. There is no operation that I know of in surgery, that needs so many trained assistants. In doing most of our major operations, the surgeon can get along with one assistant, but in doing this line of work, especially of foreign bodies, one is greatly handicapped unless he has at least, four or five able assistants.

The changing of house-men also works a disadvantage to the operator, as each new interne must be trained for this line of work.

Many of the writers speak of the simplicity of this work. I have found some of the cases simple, and some very difficult, in fact, I would much prefer to do a laryngectomy, or extirpation of the labyrinth, than to remove some of the foreign bodies we have encountered.

We have had some trouble with the instruments, including the electrical apparatus. In the beginning, our greatest trouble was in not having enough tubes and different kinds of instruments for removing foreign bodies; either the tube was too small, or too large, or the instrument was too large to enter the tube, or not long enough to reach the foreign body.

I should advise the beginner to get the outfit that Dr. Jackson advises in his paper, published in the *American Medical Journal*. I should also advise him to be very careful in the use of the cotton holders, as there is danger of the cotton freeing itself from the catch unless it is firmly attached. This accident happened to us, only once, but luckily, we were able to seize the cotton with the forceps, and remove it before it had caused any serious trouble.

Another point one has to be very careful of is, in seeing that the different attachments of the instruments used for working inside the tubes are firmly secured in their sockets.

As to electrical appliances. You will have the same trouble as in other electrical appliances, namely: Cells becoming discharged, wires becoming crossed, causing short circuiting, the controller getting out of order, etc. The only safeguard against these accidents

is to test the batteries frequently and always have an extra one on hand. I always carry two electric-light controllers, and two separate boxes of batteries.

Lastly allow me to cite a mishap we had in a child 4 years old, who had inhaled some peanut-kernel. The child was the son of a doctor in an adjoining town, and when I saw him, I thought there was nothing to be done as he was then unconscious and very synotic. We immediately did a tracheotomy and inserted the bronchoscope, and with Jackson's bean extractor, removed a good-sized kernel of peanut. The breathing immediately became normal, the pulse dropped considerably, and as the child was in a very weakened condition, no further examination was made. For at least two weeks he had a temperature ranging from 99½° to 101°. The trachea wound was kept open during all of this time as there was considerable muco-purulent discharge from the opening. At the end of two weeks, the boy expelled through the trachea wound, another piece of peanut-kernel. After this, the temperature dropped to normal, and he made an uneventful recovery.

I cite this case to show you how we can be misled in cases of foreign bodies. I thought all of the peanut had been removed on the first operation; for, as I stated before, the child was immediately relieved when the one piece was removed.

As this work is in its infancy in America, I feel sure that the future operators will have a lower mortality than ours.

536 Rose Building.

New Incision for Epithelioma of Upper and Lower Lips of Same Side. W. S. SUTTON. *Jour. A. M. A.*, Aug. 20, 1910.

W. S. Sutton describes an adaptation of the principles of the well-known Dowd operation to the removal of a growth involving both upper and lower lip. This method, however, requires his illustrations to make the description completely intelligible. He gives a photograph of a case in which the operation was performed with the incision lines corresponding closely with the plan described and figured. This shows the results of the operation twenty-two days after its performance.

BISMUTH PASTE IN CHRONIC SUPPURATIVE DISEASES OF THE NOSE, ACCESSORY SINUSES, EARS, AND MASTOID PROCESS.*

BY JOSEPH C. BECK, M. D., CHICAGO.

One of the first cases of the head treated by means of bismuth paste, and subsequently reported by Dr. Emil Beck, was a tuberculous osteo-periostitis of the orbit, with abscess and fistulous formation, in a child, and so striking was the therapeutic result that I from that time—January 24, 1908—began to employ this method of treatment with great enthusiasm.

In order to determine the value and limitation of the bismuth paste in chronic suppurations about the head and neck, I decided to experiment on every pathological condition in which the principles underlying the action of bismuth paste appeared to be indicated.

In May, 1908, I made a preliminary report before the Chicago Oto-laryngological Society on the injection of bismuth paste in antrum suppurations, and in October, 1908, I made a complete report before the Chicago Medical Society of 319 cases of the following conditions and results obtained. After more than a year's observation of these cases, treated for finding the limitations of the bismuth paste treatment, I came to the following conclusions:

1. That in *atrophic rhinitis,* while scab-forming and odor were controlled during the period of treatment, the curative effect upon the atrophic condition was negative, and, as the injections are more disagreeable than other methods of treatment, I have discontinued their use in this affection.

2. As a *primary dressing following submucous resection* of the septum, I have discontinued its use, owing to the possibility of some of the paste getting in between the muco-perichondrial flaps and thus preventing union.

3. In *ethmoid suppurations* I have found that injections were of no avail, as the paste cannot reach all the infected cells, and consequently I do not employ it in this affection, but as a primary dressing after exenteration I employ it regularly, as will be shown in the following chapters.

*Read in part before the Laryngological Section of the New York Academy of Medicine, April 27, 1910.

4. In *chronic lacunar tonsillitis* I have come to the conclusion that no permanent results could be obtained, and therefore it is of no more value than any other palliative treatment.

5. In *chronic suppuration of the antrum of Highmore,* and the *frontal* and *sphenoidal sinuses,* as a palliative treatment, I am convinced that the results are equally as good as from any other methods of treatment. As a curative method the paste has produced the best results in the radical obliteration of the frontal sinus and the antrum, as will be shown later.

6. In *chronic suppurations of the middle-ear* I continue to employ bismuth paste, and find that, while it does not cure more cases than other palliative means of treatment (the pathologic condition usually precluding such a possibility), I am nevertheless certain that in cases which are curable by non-operative measures the paste treatment will stop the suppuration quicker and recurrences will be less frequent.

7. As a *primary dressing* (at the time of the operation) in radical mastoid with plastic, I have discontinued the employment of bismuth paste, owing to the fact that some of the paste may find its way underneath the flaps and delay healing. *As a secondary dressing,* however, just as soon as union has taken place, I know of no better dressing to control the suppuration and stench, which we are accustomed to see in these cases, than the application of bismuth paste.

8. As a *framework for bone-formation* in the simple mastoid operation, with primary closure of the wound, I employ it only in selected cases, where the bony walls of the mastoid are absolutely intact, and when the character of the infection is not of a virulent type.

9. As a *secondary dressing* in simple mastoid cases I am certain there is no other method that will compare with the results in obtaining rapid and permanent closure of the retro-auricular wound.

10. In *otitis externa eczematosa,* filling the external auditory canal with the paste is preferable to other methods of local application.

11. The simplest means of *controlling intra-nasal hemorrhage,* especially when it originates from the anterior or upper regions, is the injection of semi-solid bismuth paste No. 2. The difficulty of controlling bleeding from the posterior and lower portions of the nasal cavity is due to the inability to retain sufficient quantity to plug that region, as it usually drops into the throat.

TREATMENT OF SUPPURATIONS OF THE NOSE AND ITS ACCESSORY SINUSES.—In considering the treatment of chronic suppurative diseases of the nose, I refer especially to the accessory sinuses, as suppuration of the cavity proper is usually secondary to the above-named structures, although ozena, atrophic rhinitis, and suppurations associated with foreign bodies are frequently met with. Before considering the treatment of the sinuses, it will be well to mention some anatomical, physiological, and pathological points, so far as these bear relation to bismuth paste treatment.

Anatomical Points.—The nasal accessory sinuses are solid-walled cavities, oftentimes divided by partial septa, and irregular in shape, the ethmoidal labyrinth being multi-cellular. They are neither compressible nor distensible, and are lined by a modified mucous membrane. The openings leading into them from the nasal cavity are so situated as to be difficult to the introduction of a cannula or to sounding, and this can be accomplished only by those who are familiar with the technic and trained in the use of illuminating the dark cavities by reflected light.

Physiological Points.—1. These cavities are resonators to the voice.

2. They impart warmth and moisture to the inspired air.

3. An accessory function of the sense of smell is attributed to them.

4. In order that the head should not be too heavy, the bones of the face are hollowed out in the form of these sinuses. Their hollow construction serves the purpose of making the bones of the head very light.

5. The large surface of mucous membrane has a powerful absorptive function.

Pathological Points.—There exists usually the myxomatous degeneration of the mucous membrane with polypoid formation. In very chronic cases there is frequently superficial osteitis, a necrosis with accompanying granulations.

These points must all be borne in mind in the treatment. Without being well acquainted with them, one will scarcely be able to explain the difficulties in the treatment of these cavities compared to those in the treatment in other parts of the body.

It must be stated at this time that only chronic suppurative conditions are treated with bismuth paste, never acute ones. The treatment is divided into two subdivisions: (a) Palliative and (b) radical or obliterative. The formulæ used in the treatment of the

suppurative conditions of the nose and ear are the same as those used in other parts of the body, which are formulæ 1 and 2; the technic and instruments are, however, somewhat different.

No. 1.	Bismuth subnit	33%
	Vaselin	67%
No. 2.	Bismuth subnit	33%
	Vaselin	60%
	White wax	5%
	Paraffine	5%

INSTRUMENTS.—In Figure 1 are shown the syringes and cannulæ, the use of which is described in the technic of treating the various conditions.

(A) PALLIATIVE METHOD.—*Injection of Antrum of Highmore. Condition 1.—An antrum which has not previously been treated surgically.* Position of patient: Sitting. Cocaine anesthesia.

By means of a trocar the antrum is punctured in the usual manner, and without previously irrigating it the syringe proper is adjusted by its bayonet joint and the cavity injected to distention. The middle meatus is temporarily packed with cotton in order to prevent a too free escape of the paste while injecting. A small pad of cotton is placed against the opening created by the trocar, and the patient kept quiet for about ten minutes, to insure the paste remaining in the cavity.

Condition 2.—An antrum which has an opening in the canine fossa or socket of a tooth. Position of patient: Sitting; head slightly reclining; lip retracted.

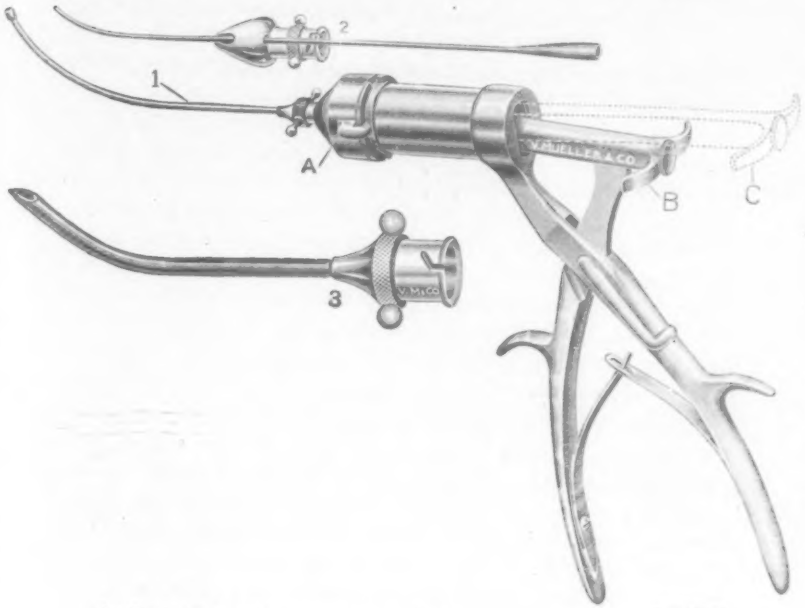
The middle meatus is firmly packed under the middle turbinal, so as to block the natural opening; then the olive tip of the syringe is put to the existing opening of the canine fossa or to the alveolar openings, and the cavity is injected. The cotton is then removed from the nose. It is well to pack the external openings either by a semi-solid rubber plug mounted on a partial dental plate or by cotton, to prevent the escape of the paste or entrance of food into the antrum.

Condition 3.—An opening exists in the lateral wall of the nose in the inferior meatus. The patient's head is placed on the side which is to be injected.

The cannula is passed into the antrum, cotton packed well about it in order to insure filling the cavity to distention, and the antrum

injected until some of the paste returns along the cotton packing. The cannula is withdrawn, but the cotton packing is allowed to remain for about half an hour, until the paste has become set.

Injection of Ethmoidal Labyrinth.—These cells are not treated by injections, except that one may apply the paste in the ethmoidal



A. Detachable point to fill the syringe.

B. Ratchet piston rod pulled back before filling syringe, raising it and allowing the movable handle to snap into place.

C. Piston in position, syringe filled.

1. Flexible cannula for injection of any of the sinuses (antrum, ethmoid region, frontal and sphenoidal sinuses).

2. Olive-shape tip with rubber catheter passing through it for injection of middle and external ear, also any external fistulae as canine fossa or alveolar opening, etc. In filling the general nasal cavity the catheter is removed.

3. Trocar for injecting an antrum where no previous opening exists.

region. It is anatomically impossible to inject each individual cell. There is, however, a distinct use of the paste as a primary dressing in operations of middle turbinectomy and ethmoid curettement. This is accomplished as follows: As soon as the primary bleeding ceases, the patient is instructed to close the post-nasal space from the pharynx by having him repeat rapidly the word "kick." Simul-

taneously one applies the olive tip of the syringe to the nostrils so as to obliterate it, and injects the cavity to the sensation of distention. Some of the paste will return along the olive tip and into the naso-pharynx when the soft palate is relaxed.

The paste employed for this purpose is formula No. 2, which is injected in as solid a form as is possible to force from the syringe. This dressing remains in the nasal cavity until the next morning, and by its presence prevents bleeding, adhesions, and decomposition of secretions. It is best if the patient does not walk very much immediately after the injection, so as not to dislodge the paste. It becomes fixed in the exenterated ethmoidal area. In this connection it may be stated that there is positively no such blocking of the nasal cavity as to cause any retention, and, in fact, it has been proven that the bismuth-paste dressing is an excellent drain, drainage taking place between the nasal wall and the bismuth dressing. There is no need of removing the paste; most of it will run out or will be blown out, and what remains is absorbed. In the use of this method of dressing it has been found that practically no after-treatment is necessary.

Injection of Frontal Sinus.—Patient semi-reclining. Cocaine and adrenalin anesthesia to naso-frontal duct.

The cannula is passed through the naso-frontal duct, and, if the passage is large, some cotton is firmly packed about the introduced cannula. The syringe is then attached and the cavity injected to the sensation of distention. Usually one observes the paste escaping along the cannula. Patient should remain quiet for about ten minutes, and a small cotton tampon remains for another hour to insure the retention of the paste in the sinus.

Injection of Sphenoidal Sinus.—Position of patient: Same as for injection of frontal sinus.

Whether or not the middle turbinated body is removed, the cannula is passed into the sinus and the cavity injected until there is an escape of the paste along the cannula. A tampon is pressed against the opening for half an hour after injection to help the retention of the paste until it has become set. Should the natural opening be too small to pass the cannula, it should be enlarged, but care should be exercised not to make it too large, or the paste will escape. In case the opening is too large to begin with, or an operation has previously been performed which left the large opening, it is well to pack some cotton firmly about the cannula to prevent the escape of the paste.

(B.) RADICAL METHOD OF PERMANENT OBLITERATION OF ACCESSORY SINUSES BY THE AID OF BISMUTH PASTE.—The ideal results aimed at in the permanent cure of chronic suppurative cavities, especially nasal accessory sinuses, is, of course, a return to the normal. This is, however, precluded on account of the pathological changes that have taken place in the mucous membrane lining these cavities. Heretofore—in fact, at the present time—it has been the practice of the majority of specialists to resort to operations of enlarging the normal outlets of the sinuses or making artificial openings, eventually curetting the diseased mucous membranes, and subsequently irrigating them by all sorts of astringents and antiseptics. The results from such treatment are very unsatisfactory, and in the majority of instances the suppuration continues.

As we cannot expect the ideal result—namely, complete resolution—the next best result obtainable is unquestionably the radical obliteration, or exenteration, of the sinuses.

Frontal Sinus.—Killian has contributed a boon to humanity in his radical frontal sinus operation. While the Killian frontal sinus operation cures a large percentage of chronic suppurations of the frontal sinus, it causes considerable amount of external deformity, which is obliterated only after some time; then also, frequently, following an acute attack of rhinitis, re-infection of the operated frontal sinus occurs. Lastly there are quite a number of cases thus operated which do not become obliterated and continue to suppurate. In order to obviate some of these difficulties, the aid of the bismuth paste is a marked advantage.

As to the *ethmoid labyrinth*, when chronic suppuration is present within it, there is no question that the complete exenteration of every cell insures the best chances for a permanent cure. Unfortunately this is not possible in the majority of instances on account of the anatomical conditions. When, however, during this complete exenteration at the time of operation an injection of bismuth paste is made as a primary dressing (as described in the previous chapter), the chances for a radical cure are increased.

The *antrum of Highmore*, even after the most radical measures, such as the Denker or Jansen operations, remains a suppurative cavity because it communicates with the general nasal cavity, although retention is obviated by these methods. The ideal result (aside from return to the normal) is unquestionably complete obliteration, and to that end the aid of bismuth paste and certain technic in the operation are required.

In chronic suppuration of the *sphenoid sinuses* the best one can do is to remove as much of the anterior wall as possible and curette the diseased mucous membrane. The obliteration of this cavity is impossible, as the retention of the paste is difficult, but it can be materially reduced in size by packing it with gauze impregnated with bismuth paste.

TECHNIC IN FRONTAL SINUS.—After opening the frontal sinus externally sufficiently to inspect the entire cavity, one will remove every vestige of mucous membrane of the entire sinus. Upon the thoroughness of this procedure depends the success of the obliteration. A probe is then passed through the naso-frontal duct into the nasal cavity and the duct curetted of its mucous membrane, but not enlarged by any operation on the bone of this duct. The upper region of the nose is now firmly packed temporarily with tampon to prevent the easy escape of the paste while filling the sinus. The sinus is now thoroughly dried of its blood by packing it with gauze saturated in peroxide of hydrogen or adrenalin, and filled completely with No. 2 bismuth paste. The periosteum and skin are sutured without any drain, and about a half an hour later, while the patient is still in the recumbent position, the nasal tampon is removed. Should the paste escape and suppuration again occur from the frontal sinus, then one will reinject the cavity by the nasal route, as described in the palliative method of treatment of chronic frontal sinus suppuration.

TECHNIC IN ANTRUM OF HIGHMORE.—The most suitable cases for this mode of treatment are, of course, such as have had no great amount of operating done on the lateral wall of the nose or internal antral wall, as any large communication into the nose prevents the retention of the paste within the cavity.

The usual opening into the antrum is made through the canine fossa, and as much as possible of the anterior and external wall of the antrum is removed. The mucous membrane is now very thoroughly removed with a curette; great care being exercised in curetting the internal wall of the antrum, so as not to break into the nasal cavity. In some cases one can remove the bony part of this internal wall of the antrum, and then obliteration is much more rapid. The cavity is packed with peroxide or adrenalin gauze and the nasal cavity temporarily, but completely, tamponed. The packing is now removed from the antrum and the cavity filled either with bismuth paste No. 2 if the antrum is of small size, or preferably, by packing it with gauze strips which have been thoroughly impregnated with bismuth paste No. 1. The ends of these gauze

strips are allowed to come out through the gingivo-labial margin after most of the incision has been sutured. The nasal tampon is now removed, and the patient remains lying on the side of the operated antrum to prevent the paste from escaping. The subsequent treatment of the cavity filled with gauze strips is to remove them in about two or three days, and either refill with similar strips or inject bismuth paste No. 2. (It should be remembered that the paste is to be used in fairly cold or semi-solid consistency in this procedure.) After the injection with the paste, drainage is discontinued and the wound allowed to close.

Recently Citelli* has made several experiments on animals in filling their frontal sinuses with the Moorhof-Mosetig plug, and subsequently tried it on some chronic suppurative sinuses in the human, with the idea of obliterating these cavities. No definite data are given as to results.

USE OF PASTE IN THE NOSE FOR CONDITIONS OTHER THAN SINUS DISEASE.—1. *After actual cautery of the inferior turbinated body.*—To prevent too great a reaction, synechia formation, and easy loosening of the eschar, the cavity is repeatedly filled with bismuth paste No. 2 until the cauterized surface is healed.

2. *Post-operative Dressing to the Inferior Turbinectomy.*—In cases where one did not require splint or gauze packing, the cavity should be filled with bismuth paste No. 2. Should packing be necessary, then the impregnation of the material with bismuth paste No. 1 furnishes an excellent dressing.

3. *Septal Ulcer.*—To control the scabbing and bleeding, the filling of the anterior half of the nasal cavity with bismuth paste No. 2 once or twice daily gives the best results. Quite profuse bleeding can be checked by this method in these cases.

USE OF PASTE IN DISEASES OF THE EAR AND MASTOID PROCESS.—1. *Chronic suppurative otitis media treated with bismuth paste.*—The olive tip syringe, which has running through it a small rubber tubing, is fitted snugly into the external auditory meatus. The rubber tubing is pushed in as far as possible, and the cavity injected with bismuth paste No. 1. The purpose of the rubber tubing is to allow the air to escape, so that the paste can follow through the perforation into the middle-ear and beyond it. A firm cotton plug is placed into the meatus to retain the paste. Examinations of mastoids in which the middle-ear was thus injected just before a radical mastoid operation, as well as experiments on the cadaver, show that the paste never passed beyond the beginning of the

*Citelli: Internat. Cntrlbl. f. Ohrenh., April, 1910.

aditus ad antrum. The attic as well as the entire middle-ear are filled with the paste. The results from this treatment are no more satisfactory than any other local measure. One fact, however, is noticeable—that the odor is markedly reduced or completely destroyed. It has occurred that during the injections patients complained of dizziness, which, however, promptly disappeared as soon as one removed the tip of the syringe. Very small perforations or labyrinth symptoms are contra-indications for the injection.

2. *Otitis Externa Eczematosa.*—The entire canal is injected with bismuth paste No. 1 in the same manner as in injecting the middle-ear.

3. *Primary Dressing in Simple Mastoid Operation by Bismuth Paste.*—In cases of acute mastoiditis in which, after complete exenteration of all the cells, the walls of the mastoid process remain intact—that is, where no exposure of either the lateral sinus, dura, horizontal semi-circular canal, or facial nerve occurred—the following technic is employed:

Dry the cavity of all the blood and insert a few strands of silkworm-gut within the antrum. Allow these to come out through a separate small incision below and posterior to the main one. Fill the cavity with bismuth paste No. 2 to the level of its margins, and unite the entire incision by carefully bringing the periosteum over the paste. The silkworm drain is removed as soon as the discharge ceases from the auditory canal, and the little stab wound is allowed to close. Radiograms taken six weeks after operation show about one-half of the paste absorbed, and two or three months later will show only traces of bismuth. The cavity has been replaced by much denser structure, as shown by comparing radiograms of mastoid cavities treated by allowing the cavity to fill with blood clot. Most of the cases treated by the above-mentioned method have healed in from one to three weeks, with practically no deformity.

4. *Secondary Dressing of the Simple Mastoid Operation by Bismuth Paste.*—In cases where one has allowed considerable drainage through the main incision the following technic is employed: After a week's or ten days' drainage with rubber tube, gauze, etc., and when the discharge from the external auditory canal has ceased, the remaining granulating cavity is filled with bismuth paste No. 2, a gauze pad is placed over it to retain it, and a bandage applied. The injection is repeated every other day until the cavity is obliterated. Frequently, especially if the cavity is not too large, the wound will close after one or two injections. The paste should never be wiped or washed out, nor is the cavity pre-

vious to the injection cleaned or washed in any way.

In injecting these mastoid cavities it may occur that some paste finds it way into the middle-ear, and even into the external auditory canal and pharynx through the Eustachian tube. This is not desirable, and need not occur if one does not use too much pressure in filling the cavity, or if one just fills it with a small spatula. In the cases in which it occurred it caused no untoward symptoms. If the wound does not heal after these injections, one may conclude that there is necrosis or an unexplored infected area somewhere within the mastoid or middle-ear. In such cases re-operation is usually necessary.

5. *Secondary Dressing of a Radical Mastoid Operation.*—After about one or two weeks of drainage by gauze, one will substitute it by the filling of the exenterated cavity with bismuth paste No. 2. This is simpler for the physician and very much easier for the patient, and hastens the granulation and healing of the exposed bone. The granulations grow very large rapidly and the injection must be at times interrupted, the granulations cauterized, and the cavity again packed with gauze so as to obtain rapid epidermization.

2551 North Clark Street.

Surgical Treatment of Exophthalmic Goiter. C. A. PORTER, *Boston Med. and Surg. Jour.*, Sept. 15, 1910.

Porter agrees with other surgeons that surgery, in properly selected cases, offers more and quicker improvements than medical treatment. To be successful, earlier operation must become the rule before incurable degenerations have developed. When reasonable medical treatment has been carried out, the surgeon should be consulted. While from the very nature of the disease permanent cures may not be common, permanent improvements follow timely and appropriate operation in the large majority of cases after medical treatment has proved unavailing.—*Jour. A. M. A.*

A COMPLICATED CEREBRAL CASE WITH PATHOLOGICAL FINDINGS.*

BY CULLEN F. WELTY, M. D., SAN FRANCISCO.

In a case sent to the City and County Hospital, with a diagnosis of intra-cranial tumor, the following findings were reported: Pupils react to light and accommodation. External rectus of the right eye, immobile. Paralysis of the right side of the face. Hearing not good in the right ear. In the mouth, a soft fluctuating mass.

At the request of Dr. Ryfkogel, I saw the case and elicited the following: Patient had always been in good health until four months ago, when he began to have pain in the right side of the head, and some frontal headache; at the same time he noted that he had a discharge of pus from the right nostril. The headache was increasing somewhat in severity. Two months ago he was repeatedly operated upon by the intra-nasal route without relief. Three weeks ago, the antrum of Highmore on this side was opened by way of the canine fossa. Following this operation, all of the symptoms have apparently been aggravated. One month ago, a swelling appeared in the right side of the throat. The frontal pain and headache on this side of the head had increased very much. During the last week there was pain in the ear, and the hearing was not as good as usual; also some pain back of the ear, and pain over the whole side of the head.

Examination: Paralysis of the external rectus muscle of the eye. Choked disc of this side and facial paralysis.

Ear examination: Paralysis of the facial nerve. Patient did not know but thought that of late the eye on this side had a tendency to become inflamed. Some tenderness over the whole side of the head. More tender over the mastoid and specially over the tip. No apparent increase of surface-temperature in comparison with the other mastoid region. The drum membrane was dark-reddish and bulging to such an extent that the land-marks were obliterated. There was bulging of the posterior superior wall to such an extent that it partly occluded the drum membrane. The patient did not hear as well as might be expected from the appearance of the drum membrane.

*Read before the meeting of the San Francisco Medical Society, February 9, 1909.

Nasal examination: R. S. Deviation of the septum to this side to such an extent, that the middle turbinate could not be seen at all. The inferior turbinate pressed against the septum and was adherent to it. The nose was full of pus, and because of the malformation, the origin of it could not be demonstrated. There was a discharging fistula from the original operation on the canine fossa; so it could be assumed that the pus was still present in the antrum, and because of the increase of the frontal headache, it was natural to suppose that this was due to pus retention, besides being painful to pressure. It was assumed that the frontal sinus was involved because of pain induced by pressure on the inner orbital wall. No illumination tests, or X-ray photographs secured.

Nose: L. S. Normal. Not sensitive to pressure about the eye.

Mouth: A tumor, hard, the consistency of bone. Apparently coming in the soft palate. In other words, the mucous membrane of the uvula surrounded this mass entirely. The tumor could be traced to the vault of the naso-pharynx, filling the right side completely, and must of necessity have encroached on the Eustachian tube of this side.

Ear diagnosis: From the fact that the patient had a facial paralysis, impaired hearing, bulging of the posterior superior meatal wall, redness and bulging of the membrane, painful mastoid, especially over the tip, my diagnosis of acute mastoiditis with pus retention was quite natural. My explanation of choked disc and paralysis of the external oblique, I accounted for in the following way, namely, ethmoidal suppuration and retention with pressure.

At this time I did not attach any importance to the tumor-mass that I found in the naso-pharynx for the simple reason that I could not account for it. I made an incision into the mass and found it was bone. I tried to secure a specimen for examination but was unsuccessful.

Operative findings: Mastoid. Large pneumatic mastoid which was filled with reddish-brown blood the consistency of chocolate. I had never seen such a condition before. Politzer describes such a condition as hemorrhagic mastoiditis, without making explanation.

To my surprise, none of the symptoms changed, and for four days, he continued to have facial paralysis and pain over the whole side of the head. Pain in the immediate region of the mastoid was improved. Ear dry of secretion. Posterior wound, healthy. Up to this time, I had not verified my examination by the tuning-fork.

Tuning-fork examination revealed an entirely different condition. Weber to good ear, which should have been to diseased ear; so it

must be assumed that the patient had either a brain abscess, with an infection by way of the semi-circular canals, because the hearing of this ear was entirely destroyed; or a brain abscess from the frontal sinus empyema, with great preference to the latter, and deafness accounted for by the pressure on the auditory nerve.

By the tuning-fork examination, I determined that the labyrinth was destroyed. Until recently we had no way of differentiation between a destroyed labyrinth and a mass pressing on the auditory nerve in such a way as to destroy its function. During recent months, a test has been found, that will probably differentiate a suppurative condition of the labyrinth, regardless of pressure on the auditory nerve. This would have been a negative finding and would have suggested a different way of communication.

You will realize that I have not spoken of intra-cranial tumor. While a brain abscess will give you exactly the same symptoms as a brain tumor, we must infer that practically all cases of cerebral complication associated with pus from the nose or ear, are directly dependent upon the same. It rarely happens otherwise, in fact, I do not recall reading of such an instance.

As has been stated before, the picture had somewhat changed, and it seemed to be a brain abscess originating from the ethmoidal or sphenoidal sinus. An abscess situated at such a place would paralyze the external oblique, besides producing a choked disc on the same side. While this is all true, there are still some things to be explained. The abscess must be in front of the optic commissure, or a similar condition would show in the other eye. A tumor-mass that made its appearance in the naso-pharynx might produce paralysis of the external oblique and choked disc. If large enough, through counter-pressure, it might produce paralysis of the facial and auditory.

From the facts as stated before, we must conclude that the man had a brain abscess situated in the region of the tempero-sphenoidal lobe, and that the infection was from one of the nasal accessory sinuses, probably the posterior ethmoidal or sphenoid. This would account for all the different manifestations as it would make its appearance in practically the same place as the tumor-mass before mentioned. It was my belief that the tumor of the naso-pharynx was in no way connected with the cerebral condition.

The patient grew weaker daily and complained of increasing pain. He would not allow another operation and died in the course of a week.

Pathologic findings: Doctor Ryfkogel furnished me with the following from memory, the exact data having been lost in the fire of 1906:

A sarcomatous tumor-mass about the size of a fist occupying almost the whole of the middle fossa was found which was a continuation of the mass found in the naso-pharynx. It completely destroyed the sphenoidal sinus and the posterior ethmoidal sinus; the anterior ethmoidal cells, the frontal sinus, and the antrum of Highmore contained pus; incipient meningitis in the region of the frontal sinus and ethmoidal cells. The tumor-mass was so large that it would account for all the nerve lesions. However, it is extremely rare to find such a large tumor that has not produced a choked disc of both eyes, as it must if it press on the nerve.

Cerebral complications are difficult to diagnose, and with clear, well-defined symptoms and lesions pointing to definite pathological conditions, mistakes can be made. If cerebral complication develops during the course of, or following an ear, or nasal suppuration, we are doubly justified in assuming that the origin was from the primary infection, rather than from an intra-cranial growth. I wish particularly to emphasize this point.

Had I made a tuning-fork examination before my first operation, I would have been led to believe that the cerebral complication was from the ear, because it was reasonable to suppose that pus was in the mastoid. The pain on the whole side of the head for four months is easily explained by the nasal empyema.

From the pathologic findings, we see that the primary diagnosis was correct. It explains fully the paralysis of the facial, the external oblique and the auditory, but no explanation can be given as to why the choked disc did not appear on the other side, while the diagnosis was correct. The doctor on more mature deliberation was not justified in arriving at such a conclusion.

I report this case, merely to show the necessity of examining all cases very thoroughly.

Shreve Building.

SPECIAL EDITORIAL DEPARTMENT

DEFECTS OF SPEECH.

Progress Made in this Work.—
Hints and Suggestions to the Laryngologist.

EDITED BY
G. HUDSON-MAKUEN, M. D.,
PHILADELPHIA.

Nomenclature of Defects of Speech.

It is to be regretted that more attention has not been given to the nomenclature of defects of speech. Authors are not agreed even now with reference to the use of the terms stammering and stuttering. In England, the word stammering is limited to the designation of hesitating and spasmodic speech, and stuttering is regarded as a form, or stage, of the same affection; whereas, in Germany, the word stuttering is used to designate hesitating and spasmodic utterance, and stammering speech is that characterized by a faulty enunciation of the elements.

In our own country, we are inclined to follow the example of our English cousins in the use of these terms, although some seem to find good reasons for adopting the German custom, and this lack of uniformity results in no little confusion.

The word stammering is so generally used by English speaking and writing people to designate spasmodic hesitation in speech, that it seems almost necessary to adhere to it and supply some other word, or words, for the designation of the articulatory defects. Lalling has been used for this purpose, although it does not seem to be sufficiently comprehensive.

The two terms which seem to designate most accurately the two important classes of defective speech—namely, that one in which spasmodic hesitation is the chief characteristic, and that in which the elements are improperly enunciated—are, dyslalia and pseudo-

lalia; the former meaning literally difficult speech, being used to designate spasmodic utterance, or stammering; and the latter, meaning false speech, being used to designate all the other minor defects of enunciation and articulation.

Dyslalia, then, is the term that will be used in these columns to designate all forms of spasmodic utterance. It is the general term and it includes the specific forms of the affection, such as speech hesitation, stuttering and stammering. These latter three terms represent or differentiate three forms of the affection, and bear the same relation to it that the terms acute, sub-acute and chronic bear to the systemic diseases. Speech hesitation is acute, stuttering is sub-acute, and stammering is chronic dyslalia.

Pseudolalia, as its name indicates, denotes false speech, and includes all forms of defective speech other than those which come under the head of dyslalia. As dyslalia is characterized by a spasmodic contraction of the muscles and mechanisms of speech, pseudolalia is characterized by the absence of this contraction and by either an entire omission or elision of certain important elements, or a substitution of faulty for the correct sounds of speech. Pseudolalia is a general term and includes such specific forms of defects of speech as lalling, rhinolalia and sigmatism, etc., which have been used to designate the defective utterance of certain individual speech elements.

Fear as an Element in the Causation of Stammering.

The following extract from a letter is interesting because it comes from the pen of a physician who stammers. After stating that he does not agree with me in my conclusions as to the causation and treatment of stammering, he writes:

"I stammer myself, and at times quite badly. I consider stammering a 'phobia,' pure and simple. My sole experience teaches me that, and those I have met similarly troubled bear me out. The stammerer's speech is faulty through fear. No training of the physical organs of speech will help, but on the contrary, makes matters worse by attracting attention to the difficulty. I find the less I think about the difficulty, the better I get along. Any attempt to train the organs of speech makes matters worse. To banish fear of my surroundings is the only thing that helps. There is no obstruction to good speech but fear.

"This fear when it has persisted for years is often almost impossible to eradicate at will. The brain-center involved has become so sensitized that at times the very thought of words and speech excites its activity with the resulting rigidity of the muscles concerned in speech. In other words, the 'stammerer's instrument' is all right, but it is controlled by a morbid fear.

which after years of repeated excitability, is highly sensitive and will respond to the slightest 'whiff,' I might say, of emotional fear.

"The four important things you mention (respiration, phonation, articulation, mentalization) are all practiced by those who profess to cure stammering. To my mind, however, the first three are ineffectual unless a change in the fourth (mentalization) can be brought about. Banish the fear and no attention need be paid to anything else.

"I submit the above for your consideration.

"Very truly yours, etc."

This letter is especially interesting because it describes the attitude of mind that many intelligent stammerers evince with reference to the affection, and my answer to it was an effort to point out certain fallacies frequently embodied in the stammerer's own diagnosis of his condition.

In the first place, we have here an instance of a man reaching conclusions with reference to a serious affection from an exceedingly limited observation. In fact, he is probably giving his own individual experience, and he happens to be one of those hypersensitive stammerers in whom fear is the dominant factor. He says that stammering is a "phobia", that it is due entirely to fear; that if you banish fear, no attention need be paid to anything else. Now, to what extent is this true? Is fear an essential element in the causation of stammering, or is it merely a symptom and a concomitant mental condition? That it is largely a *result* of the initial stages of dyslalia, and not the cause, I am fully convinced; but that it is a factor in the final stage, namely that of stammering, I think we must admit. Let us review briefly the development of the affection.

In the initial or acute stage of dyslalia, as I have said, we have a slight hesitation in speech, which in the majority of instances would not disturb the child if his attention were not called to it, or if he were properly shown how to overcome it. The second or sub-acute stage soon follows and the child begins to stutter. His care-takers now become alarmed at the situation, and with a laudable desire to help, but generally with a very meager conception of the nature of the affection, they actually make matters worse by giving the wrong kind of advice and by giving it in an impatient or irritable manner. The child is urged to "stop stuttering," a thing which he is absolutely powerless to do unless he stops talking altogether, and it is at this stage that the element of fear begins to manifest itself. From now on, fear becomes an important factor in the further development of the affection, and

it is quite within reason to suppose that the third or chronic stage of dyslalia, viz., stammering, might not develop at all if the element of fear could be eliminated. Fear therefore is a concomitant of dyslalia, a frequent result of its initial stages and an important factor in its continuance and development into its final stage—stammering; but it does not follow from this that stammering is a "phobia" pure and simple and that fear is the sole cause of the affection.

"Banish the fear and no attention need be paid to anything else," says the doctor, but the only way to banish fear is to develop *confidence* in its stead, and just as the fear has arisen from a failure to speak without difficulty, so must confidence be restored by the full assurance that normal speech is entirely within the range of possibility. "The antidote to fear," says Emerson, "is knowledge," and so the stammerer must learn by the practice of physiological respiration, phonation and articulation that he can surely speak well under all circumstances, before the fear which has been the result of stammering speech can be eradicated. It is not possible, therefore, to banish the fear of the stammerer except through training in respiration, phonation and articulation; but if it were possible to banish his fear in any other way, the question arises, would it cure the stammerer? Manifestly it would not, but it would only remove an obstacle in the way of his being cured. The stammerer's speech-mechanisms are habitually faulty in their action, and in order to correct their faulty action a certain amount of training is absolutely necessary. In order that the work may be successful, the training must be along physiological lines. Failure to cure stammering is generally attributable to one of two things; either to unphysiological training, or to a lack of concentrated effort on the part of the stammerer himself. If the stammerer be given suitable respiratory, phonatory and articulatory exercises, and if he can be induced to practice them conscientiously and vigorously for a sufficiently long time, the results will always be entirely satisfactory.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, February 23, 1910

JOSEPH H. ABRAHAM, Chairman.

DR. LEDERMAN said that the question of the proper treatment of these cases was very important. The serum treatment is becoming an important factor, and if one had time to isolate the distinctive organism from the patient and make a serum, the latter would be very valuable. A few hours make a great difference in these cases, as the severe sepsis kills in a very short period. He has seen two other cases, one of which was a typical case of angina Ludovici which followed an acute infection of the ear, through the anterior cervical lymphatics. The tongue was protruded from the mouth, there was high temperature, and chilly sensations. In this instance he was fortunate enough to find the pus cavity, by making three incisions under the tongue. By good drainage, and by repeatedly dilating the incision, the patient got well. In a similar case which Dr. Gleitsmann had seen, the condition resulted from a traumatic affection; the patient had swallowed a bone, and a week later developed difficulty in swallowing and respiration. In this instance there was a distinct swelling below the ramus of the inferior maxillary bone, externally. He was able to localize a slight prominence of the lower pharyngeal wall on a plane with the aryteus-epiglottic fold, into which he made an incision, and was much gratified to see pus exuding from the incision. He dilated with an ordinary curette, and this patient also recovered. Here also, the edema head invaded the laryngeal tissues and involved the respiratory function. Probably the infection was not of a very severe character. In the case reported to-night, the success was largely due to the physician, who stayed at the patient's side for 40 hours. He opened the wound again later on and let out more pus, as the edema had reappeared. Following the re-opening of the incision, the local symptoms subsided and convalescence was prompt

Case of Deformity of the Nose Following Destruction of the Cartilage. By E. L. MEIERHOF, M. D.

DR. MEIERHOF said that he had seen the patient for the first time that afternoon, she having been brought to him by a patient whom he himself had treated a year previously, who gave him a history of the case. The patient had had a marked swelling in the internal nostrils on both sides of the septum. Incision was made and a large quantity of pus was evacuated. Then the patient was lost sight of until the other day when she was brought to him for observation. The great deformity of the nose was evident, and with the history he expected to see a marked destruction of the septum, but to his surprise, he found the perichondrium intact, as the disease had limited itself to the cartilage and the soft parts had been spared. The cases he has seen have been mostly in children, and what became of them he did not know, for most of them are seen in the clinics and the patients are lost sight of. He thought the members would be interested to see what happens in such a case. There was practically an entire breaking down of the septum, and by taking hold of the lobe of the nose one can feel the entire loss of resiliency. The cartilage and the bony parts of the septum have been entirely destroyed. Besides, the patient has an hypertrophied turbinate and some disease of the ethmoid cells.

Replying to a query as to whether there was any history of trauma, or any previous deformity, Dr. Meierhof answered in the negative. The patient said she had a very nice nose before the physician made the incision for the pus, and she blames him for the deformity.

DR. LEDERMAN said that he too had examined the case and had the same impression as Dr. Meierhof. The patient claims that she had a very nice nose before her illness. He had tried to get a history of traumatism or of specific condition, but none such appeared. On attempting to find a perforation he was surprised not to discover any. The only history she gave was that she had had a purulent discharge from the nose 10 months previously, and after that the nose fell in. A young male patient of his had been hit on the tip of the nose and had a similar deformity. He had been treated for malaria on account of the chills and fever, which were the result of sepsis. Quite a quantity of pus had come from the nose, after an incision had been carried through the abscess, and that healed up without any perforation in the mucous membrane. He was treated by paraffin injection later on, with very satisfactory results.

DR. MEIERHOF said that if an attempt were made to lift the skin a deformity would be produced in the face. There seems to be very little loose skin over the bridge. If an attempt were made to inject paraffin an infra orbital fold would be raised which would increase the deformity of the face, while it might improve the deformity of the nose. Perhaps a very limited amount of paraffin would improve the appearance a trifle.

DR. CARTER said that for some time he has made a study of these cases. The flattening and depression is caused by the separation of the nasal bones, and by the loss of the keystone of the arch. The upper edge of the cartilaginous septum, resting between the alae forms the keystone. When suppuration occurs between the layers of septal mucous membrane this important segment sloughs out, and the arch reforms, but on a lower plane.

DR. CARTER has performed his *bridge splint* operation on several cases similar to this one and has obtained fair results, though they are not ideal cases for the operation. In order to raise the bridge, the septum, which in these cases is always too short, must be lengthened. In order to do this he starts near the floor of the nose and makes a diagonal incision upward through the septum, so that the incision which began near the base of the septum on the left side would emerge near the roof of the nasal cavity on the right side. So when he raises the bridge he gets a sliding motion between the two segments of the septum, which is lengthened without leaving a perforation.

In these cases there is always a step-like deformity at the ends of the nasal bones, caused by the subluxation of the lateral cartilages at this point. With a Myles rectangular septal knife he cuts through this attachment, so that the lateral cartilages can be raised to the same plane as the nasal bones when the *bridge splint* is applied. In a case like the present he would advise using a part of the nasal processes of the superior maxillae in building up the arch.

Replying to an inquiry from Dr. Cocks as to whether he would use the bridge splint in a case of this sort, Dr. Carter said that he had used it on several similar cases with fair results, though these cases are not the most favorable for the operation. In this case the septum is very thin and there is no septal cartilage left. He believes that the greatest benefit in this instance would be derived from raising the bony arch by narrowing its base.

DR. WATERMAN said, that some years ago he had reported 14 cases of acute abscess of the septum, and that since then, he had seen 8 cases. In nearly all of these cases there was some slight deformity, although not so much as in this case.

Nasal Osteoma. Report of a Case. Operation. By J. H. GUNTZER, M. D.

DISCUSSION.

DR. CHAMBERS said that he had a case of osteoma and had hoped that Dr. Guntzer would speak not only of osteoma of the hard variety, but also of the rapidly growing soft variety. He has a case which came to him on Thursday last, he having seen her a week ago, with a good deal of frontal headache. She could not stand any pressure applied over the antrum, and he thought that perhaps there was pus in the antrum of Highmore. He entered the antrum through the nostril, but got no pus, though there was a little muco-pus in the nose. The nostril seemed normal, the inferior turbinate was entirely natural in appearance, and the antrum was entered without taking off the anterior turbinate. The antrum was not easy to get into, and he had to use a trephine and went through ½ inch of bony substance, which he thought might be an osteoma. When he went into the antrum on Saturday, he found a swelling under the eye, over the face, and thought there must be a collection of pus. He tried to enlarge the opening into the antrum, and took a strong forceps, as he believed there was an osteoma there at the outer wall of the nostril, projecting more or less into the antrum. On Monday he went to see her, and found her suffering greatly; she had much pain and more or less swelling, which had increased on Tuesday. With a confrère and an anesthetist he proceeded to make a complete examination of the growth, which now had assumed quite large proportions. A finger placed under the cheek showed that a tumor bulged from the wall of the antrum anteriorly ½ inch. It was round in appearance but did not fluctuate. He made an incision 2 inches in length, the whole length of the growth, and it seemed to be a shell, but when he got in he found nothing but granulomatous tissue.

Here was a case of acute osteo-sarcoma, he thought. He did not see what else it could be, starting from an osteoma pure and simple. She had had an injury 10 years previously, and the doctor in attendance had stated years ago that she had an abnormal condition of affairs in that antrum. It did not appear abnormal to Dr. Chambers when he first saw her.

Diagnosis and Pathological Findings in an Unusual Case of Epithelioma of the Larynx. By D. B. DELAVAN, M. D.

DR. DELAVAN also presented a case of epithelioma of the larynx, operated upon for him by Dr. B. Farquhar Curtis nearly 13 years ago, about two-thirds of the larynx having been removed. The patient was asked to speak to the audience in order to demonstrate the character of his voice. His voice was somewhat hoarse, but easily heard all over the room.

THE PATIENT: "Unfortunately last Sunday I contracted a slight cold or my voice would be much better. Thirteen years ago this coming June I was operated upon. In two years I resumed business with a tube in my throat. The doctor refused to take it out until I could breathe freely, which I did a year later. I am now travelling without it, constantly for 10 months out of the year, and feel myself proof against any cold, for I am acclimated to any climate. I have just returned from St. Paul, where it was 22° below zero. I left there without a cold but caught one, later."

DR. DELAVAN said that we have all been hoping for something better than surgery in these cases. We in New York are watching with great interest some experiments which are being made in the Roosevelt Hospital by Dr. Eugene Hodenpyl, with a new serum.

In reply to a query from Dr. Gleitsmann as to how much of the larynx had been removed in the case presented, Dr. Delavan said that two-thirds of the larynx had been excised, and there was a remnant of one vocal cord.

DR. SIMPSON said that the principle brought out by Dr. Delavan in his paper was a very important one. It illustrates forcibly the fact that there is no royal road to diagnosis or treatment of cancer of the larynx. The case presented by Dr. Delavan illustrates the type in which it is very difficult to make a diagnosis. There are no classical symptoms or points in the formative stage of epithelioma of the larynx. It is only when the growth is beginning to break down that its characteristic features are positively evident. The question of age does not always settle it, nor does the question of pain, for all have seen from time to time fairly well-marked epithelial growth without pain. The question of location does not always settle it. There is nothing that will definitely settle it excepting the microscope after excision of the growth endolaryngeally or by the external operation. Then we are brought up against a very difficult proposition, for when the growth is excised for diagnostic purposes one must be ready to offer surgical opera-

tion. Sometimes the patients object, and we are bereft of the ability to make a diagnosis.

Dr. Simpson said that the subject was one that had particularly interested him lately. Having had the last few months a number of patients in whom all the signs were present except the one needed, and in all instances they refused to have any internal interference. The one point that will settle the diagnosis if we can wait, is the question of time. As a rule, growths of the larynx, if they are going to turn out to be malignant, show a fairly rapid growth. If we can observe a patient for a month, two months, or longer and the characteristics of the growth do not change—the longer they remain stationary, the better can we make the prognosis of not being malignant.

Dr. Delavan said that he could not agree with Dr. Simpson as to the rapidity of the development of malignant growths. They might vary through the widest possible range of difference. Dr. Harmon Smith had reported a case which took 13 years to reach a stage where interference was necessary. He had seen a case of papillomatous-looking growth which was under observation for 2 years. It was apparently non-malignant, but at the end of 2½ years it began to increase in size, very rapidly; the larynx was operated upon, and microscopical examination showed distinct epithelioma. Some are very rapid from the beginning, while others are evident for a considerable time before it is possible to say what they are.

Dr. Delavan presented to the society a photograph of those present at the dinner given on the occasion of the one hundredth birthday of the late Manual Garcia, and said that recently there had been formed in London an institution modelled after the New York Academy of Medicine. It is called the Royal Society of Medicine, and is divided into sections, as is the New York Academy. They have a Section in Laryngology that absorbed the old Laryngological Society, just as the Section of Laryngology of the New York Academy of Medicine absorbed the old New York Laryngological Society, the oldest Society of Laryngology in the world, having been founded by Dr. Clinton Wagner, in 1873.

Last summer, Dr. Delavan had the pleasure of meeting Sir T. Lauder Brunton, of London, and in conversation he mentioned the value of placing in a general museum such things as we might have collected,—objects of curiosity and of scientific value, in which our families might not be interested,—and which belong properly in a museum. Sir Lauder Brunton mentioned that he had a photograph of the dinner given to Manuel Garcia on his hundredth

birthday, and when told that we had no copy of this he offered to send his to us if it could be preserved and if it would be of any use to the Section of Laryngology. He was assured that the Section would accept it with thanks. The picture was duly forwarded and received. On the occasion of his hundredth birthday, Manuel Garcia was taken to Buckingham Palace and there decorated by the King with the Victoria order. From Buckingham Palace, he attended a large meeting at mid-day, at which he received the congratulations of representatives from all over the world, including those of the leading reigning sovereigns; and in the evening attended a dinner given in his honor by the Laryngological Society of London. That was in 1905.

With the picture was received a page of the London *Times*, giving in full the day's proceedings. This has been made into a little book, which will accompany the picture and explain it.

DR. SIMPSON moved that a vote of thanks be tendered to Sir Lauder Brunton for the donation of the picture. Motion was seconded and carried.

DR. ABRAHAMS said that the Section was indebted to Dr. Delavan for his kindness in presenting this picture, and also appreciated the fact that Dr. Delavan had spent much time and thought in building up the museum of instruments for which a suitable cabinet had been provided, and appealed to the members to place in it any interesting instruments, pathological specimens, etc., which would add to its value, but which, if kept in their own homes or offices, might be lost.

A New Rongeur. By WM. SOHIER BRYANT, M. D.

This form of rongeur has been found very valuable in removing the maxillary ridge. It is small enough to go in well, and strong enough to bite off the hardest bone.

DR. ABRAHAM said that a short time ago he had presented a nasal forceps and had showed a few pledgets of cotton.

It is necessary that we should have more asepsis in our submucous work, and he had succeeded in having these little pledgets made by hand and put up in boxes of 25 inches each. He thought that they would prove very useful, as they were of the proper size and consistency, were sterilized, and ready for instant use.

Demonstration of an Adaptation of Vacuum Cleaning to Surgical Operations. By W. H. HASKIN, M. D.

Dr. Haskin said that he had used this apparatus for a number of years in his own practice and had found it very useful, but had never thought that others did not use it also. It is especially useful

in nasal practice for cleaning out the ethmoidal cells, frontal cells, antrum, and sphenoidal cells. He uses with it a Eustachian catheter, and it will take out any secretion that you can get at. You see where it is coming from, put in the catheter, and suck it out, leaving the membrane clean for the application of whatever you may wish to make. He also uses it in mastoid surgery and when it comes to working in the aditus or the middle-ear it can be kept absolutely clean. Recently he used it in a brain abscess, exposing the cerebellum and petrous portion. There is no blocking of the field. You can uncover the Eustachian tube and you can see the foramen ovale.

In ordinary office work it is well to keep the vacuum bottle half filled with a strong antiseptic solution, such as a one per cent solution of formalin, and to have the glass tube which is connected with the catheter reach nearly to the bottom of the bottle. After the secretions have been removed, by reversing the current of air, the solution can be forced through the tube; thus showing just what has been removed and at the same time sterilizing the tube. After the tube has been thoroughly washed out, it is well to again reverse the pump and suck all fluid from the tube so that it will not escape on the floor. He uses a metal catheter with two or three perforations, and it will keep the throat absolutely clean, so that the patient does not have to be turned to one side. By using this in the nose after the operation, you clear out the blood and mucus, and the patient is in much better condition when he comes out from the influence of the ether.

The number of uses to which it can be adapted are unlimited. In his office he keeps the pump on the left hand side where he can turn it back and forth. He does not use cotton applicators for cleaning. The crypts of the tonsils, and the thick pharyngeal secretions which are so difficult to get off, can be easily cleaned with this apparatus; by simply putting on a little larger catheter the secretion can be easily sucked off.

In operations where you use the bottle with a little water, one must be careful to pull the tube up out of the water, for otherwise, when the blood comes into the water, it froths and comes into the pump and obstructs it.

Another suggestion is that when you reverse the current, you are apt to blow the cork out unless it is fastened.

There are three of these apparatuses made—the Victor, the Wappler, and the Kny-Scherer. They are preparing bottles for general use, with a little catch that will fasten the tube down. On the operating table you can hang it anywhere you want, and can

let the rubber tube hang straight so that it will not become clogged. It does all the sponging in mastoid work, and greatly shortens the operation. The other day the house surgeon performed his second mastoid operation with the aid of this pump; that generally means from 1 to 1½ hours—but he was through in 25 minutes. You do not have to stop for any one to sponge, but simply follow the catheter in the field of operation. It has an enormous application in the field of general surgery. They are now making catheters which are graduated, large at the end and coming to a small point, but he himself has never used anything but the simple catheter. After operative work in the antrum or ethmoidal cells, they can be cleaned out without disturbing the patient at all. Recently he had his assistant bring some mastoid wound cases which had become very foul, and had him use this apparatus to clean out the aditus. It sucked all the secretion from the middle-ear, and the wound, and in 2 or 3 days completely changed their character.

There are three forms of these vacuum-producing pumps now in the market; they have been on the market for years for pneumo-massage, but he did not know of any who had used them for vacuum cleaning, although he has used an old Wappler pump for 10 years. If any one once tries it he will be very quickly converted into using it.

DR. CHAMBERS said that it would make a great change in his practice. He seldom does a tonsillotomy with an anesthetic on account of the danger and annoyance caused by the bleeding, but with the aid of this instrument he would be willing to use an anesthetic more frequently, and do more tonsillectomies.

DR. CARTER said that he wished to endorse what Dr. Haskin had said about the removal of blood and secretions by suction during an operation. He has been employing the method to a certain extent for several years, he uses the Wappler machine, which removes blood, pus or secretion very satisfactorily. The apparatus he uses is almost identical with that shown by Dr. Haskin. The suction pump has been used in general surgery and in gynecological practice in all of the large hospitals for several years. When he was on the staff of Bellevue Hospital it was used in the gynecological wards. Pynchon, who devised the pump shown to-night, has used this instrument while dissecting out tonsils, for several years.

Gouge for the Removal of the Bony Maxillary Ridge in the Submucous Septal Operation. By A. BRAUN, M. D.

(Published in full in the April, 1910, issue of THE LARYNGOSCOPE, *p. 472).*

DISCUSSION.

DR. CARTER said that he had a gouge which he had used on several occasions very much like the one presented by Dr. Braun, but that he did not like it; for the corners will tear the mucous membrane. He usually uses a forceps in removing the cartilage. By catching it firmly and swinging it from side to side, it removes it very well.

A Further Study of the Bacteriology of Suppuration in Accessory Sinuses of the Nose. T. L. LEWIS. *Ed. Med. Jour.*, April, 1910.

Some of the chief conclusions reached by the authors are as follows:

(a) The four principal types of cocci found are the pneumococci, streptococci, staphylococci, and diplococci of the type of micrococcus catarrhalis.

(b) Bacilli are less common but not infrequently there occur the bacillus coli and its allies; putrefactive bacteria such as proteus; dental organisms such as bacillus gangrenæ pulpæ and bacillus necrodentalis; an obligate anerobic group of which the most common are the bacillus ramosus; a diphtheroid group; and the bacillus influenzæ.

(c) As indicated both clinically and bacteriologically, infection of the maxillary antrum is of nasal origin in two-thirds and of dental origin in one-third of the cases.

(d) In recent sinus suppuration, streptococci when present, are virulent in 60 per cent; in chronic suppuration they are virulent in 30 per cent.

(e) Feter may be present in antral suppuration of very recent origin and in nasal as well as in dental cases.

(f) Alveolar lavage should be abandoned in favor of the nasal method.

(g) In chronic cases (over three weeks) the history, duration, and path of infection give no indication as to the curability by lavage.

(h) Lavage should not be attempted in a chronic case when the discharge contains both streptococci and an excess of lymphocytes.

(i) Failure of lavage in streptococcal cases may be due to the patient's deficiency in protective substances and streptococcic vaccine may then be of value.

(j) There is no evidence of any special combination of organisms responsible for failure by lavage. GUTHRIE.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

Sixteenth Annual Meeting, Washington, D. C., April 28, 29 and 30, 1910.

JAMES F. MCKERNON, Chairman.

Presidential Address. By J. F. MCKERNON, M. D.

To be published in full in a subsequent issue of THE LARYNGOSCOPE.

Abscess of the Larynx with Report of a Case. By J. S. WATERMAN, M. D.

Case of a man 42 years of age, who, when first seen, complained of a slight sore throat, hoarseness, and of dry, hacking cough. A year before, the patient had had incipient tuberculosis, from which he made good recovery under treatment. When examined, the larynx was found to be slightly red and congested. The condition progressed, despite treatment, until on the fifth day the arytenoids showed as full, round masses, pale in color, and nearly filling the glottis. After deciding that he had to deal with double abscess of the larynx, situated at the summit of each arytenoid, the larynx was cocainized and the abscesses evacuated, each discharging a foul-smelling pus. This was followed by almost immediate relief from dyspnea. The local condition continued to improve, and the larynx had nearly approached the normal by the seventh day following the evacuation of pus, excepting that the color was redder than normal, and the vocal cords were intensely congested. On the fifth day after the opening of the abscesses, there was a slight dullness found over the right lower pulmonary lobe anteriorly. Over a small area there were coarse, moist râles. This condition had existed for several days, when the patient complained that, on coughing, a mass came into his throat and nearly strangled him. Careful examination well into the trachea revealed nothing which seemed to account for the strangling. The following morning, after a violent fit of coughing, the patient coughed up and expectorated a fleshy mass, two inches long, by three-quarters of an inch in thickness. This was examined by Dr. Jonathan Wright, who reported that the mass, microscopically, consisted of detritus granules, a few epithelial cells, and a large number of elastic fibres. Stained for bacteria, there was dimly seen a large number of bacilli, but few cocci, and these not in chains. Dr. Wright subsequently suggested that the bacilli might have been colon bacilli. The

patient gradually sank and died on the sixteenth day of the illness. The case presents the picture of a man who had entirely recovered from an incipient tuberculosis, but who was much below par, apparently dying from a septic pulmonary lesion, the nature of the offending organism being uncertain. Without the gangrene in the lung, he would undoubtedly have recovered from the laryngeal condition.

The literature of the published cases is reviewed in the paper.

Infectious interstitial inflammation of the larynx, submucous laryngitis, phlegmonous laryngitis, suppuration of the larynx, and abscess of the larynx, are terms applied in the literature to the condition described in the case presented. The last term seems much the simpler, as it presupposes a submucous or interstitial inflammation, and includes all of the other conditions, leading up to the abscess. In adults, the prognosis is good in those cases operated upon, bad in those upon whom no operation is done. In children, the prognosis is bad; five out of eight reported cases died. From four to ten days seems to be the usual time for the abscess to form, and the course to recovery, from ten days to two weeks. There is no class of cases which requires closer attention, none which causes greater anxiety, and none which, recovering, would give the surgeon greater satisfaction. The case reported seems to be the only one on record where there were two separate abscesses in the larynx, occurring at the same time. Cases of laryngeal abscess due to perichondritis are not considered in this paper.

DISCUSSION.

Dr. H. Holbrook Curtis liked better the term phlegmonous inflammation. It has long been maintained by Semon that the majority of cases of abscess of the larynx are caused by a specific germ, while others have contended that a variety of germs may give rise to the same anatomical and pathological picture. The speaker believed the abscess in the case reported to have had its genesis in the laryngeal tuberculosis said to have been present in the past. Williams had classified septic inflammation of the larynx under five different heads, each of which condition, however, may be due to the streptococcus, the staphylococcus pyogenes aureus and albus, the bacillus tuberculosis, the micrococcus erysipelatis, or the bacillus coli communis. Abscess of the larynx is well known to be less dangerous than the resulting infiltration in the cervical fascia and possibly the mediastinum. Early incision and scarification, as practiced, is evidently the proper treatment.

DR. B. R. SHURLY added the seventh to the series of six cases which the reader of the paper had said to be the only instances of subglottic abscess reported in the literature. The patient, a male child, 2½ years old, was admitted to the diphtheria ward of Harper Hospital, December 12, 1909. The pulse was 150 and the axillary temperature 99.6°. Breathing was extremely difficult, the respirations were of a whistling character, the inspirations were prolonged and the expirations short and hollow. Cyanosis was not marked. Intubation was performed half an hour after admission, with immediate relief. Four hours later the patient coughed up the tube, which was re-inserted. The tube was retained for four days without further difficulty, the child took nourishment well, the pulse dropped to 128, and the temperature became practically normal. On the fourth day extubation was performed, but as breathing became more difficult, the patient became cyanotic and the pulse very weak, the tube was re-inserted one hour after removal. It was again coughed up within a few minutes after insertion, was again re-inserted, and again coughed up, with considerable membrane, five hours later. A few hours' relief followed, but the child's condition then became so alarming that cardiac stimulation was resorted to, and intubation again performed. At the end of twenty hours the tube was once more coughed up. The patient recovered, though the respiration never returned to normal, and when dismissed, twenty-one days after admission, there were evidences of laryngeal constriction. On January 20, 1910, thirty-four days later, the patient was again admitted to the hospital. The respirations were of a wheezy character and increased from twenty-six to thirty-two in two days. Breathing became gradually more difficult, until on the fifth day the patient was cyanotic, and the pulse was almost imperceptible. Intubation was performed with difficulty, but the tube was immediately expelled. Artificial respiration was resorted to and oxygen administered. Strychnin was given hypodermatically. The patient suddenly coughed up a pus-like discharge mixed with mucus, the tube having broken a subglottic abscess. Breathing at once became markedly improved and the pulse stronger. When the patient was discharged, seventeen days after admission, the respirations were only slightly wheezy. On March 10, the patient was again admitted, with temperature 100.6°, pulse 100, respirations 36, and still wheezy, and with a severe cough. He gradually improved, and when discharged there remained a very slight subglottic stricture.

DR. W. C. BRAISLIN said the paper illustrates very well two conditions which are likely to cause death in these cases, the edema, shutting off the air passage, and the tendency of later pus-formation to burrow downward into the mediastinum, causing pericarditis, endocarditis, or pneumonia. A strict line of demarcation cannot be made between cases of this kind and those cases of abscess which occur outside the larynx, requiring incision of the neck. He had found abscesses very common in children after one infection or another, particularly after diphtheria. Early and repeated incisions had given the best results in his experience. Edematous inflammation soon degenerates into a purulent condition, and for this reason every point which is at all suggestive of fluid infiltration or edema should be incised.

DR. WALTER B. JOHNSON considered the case detailed in the paper as one of phlegmonous inflammation. Abscess of the larynx of traumatic origin should not be placed in the same category with this severe form of inflammation, in which the abscess is only an incident. The inflammatory condition occurs first and lasts for a considerable time before the breaking down and abscess-formation occur. The discharge in such cases is not the ordinary purulent discharge met with in abscess of the larynx of traumatic origin.

DR. EDGAR M. HOLMES reported the case of a man, 25 years of age, who had become hoarse the morning after being out to dinner. Toward night, speech became painful, and the following day dyspnea was marked, the temperature rose to 101°, and the pulse was considerably accelerated. The laryngeal image was one of edema plus redness, much greater redness than is ordinarily seen with edema. The false vocal bands were so swollen that the cords could not be seen. The diagnosis was made of probable acute inflammation with edema. The use of the scarifying knife was followed by a marked discharge of pus, after which the symptoms subsided.

DR. WATERMAN, in closing the discussion, said the larynx had not been involved in tuberculosis in the case reported. The tuberculous process was situated in the left apex. Lung involvement seems to be a rare complication in these cases of laryngeal abscess, as he found no other similar case reported. He would be interested to see the injection of leucocytes in this class of cases.

Hemilaryngectomy for Epithelioma. Exhibition of Patient. By T. P. BERENS, M. D.

(Published in full in the October, 1910, issue of THE LARYNGOSCOPE, *p. 984.)*

DISCUSSION.

Dr. Charles W. Richardson cited a case in his practice similar to that reported by Dr. Berens, with the exception that there was more infiltration of the left cord, and that the patient was younger, being only 40 years of age. The character of the growth was the same. He had for sometime thought when next he had a case of true intrinsic growth of the larynx, he would operate by a new method, as suggested by Dr. J. Solis-Cohen, viz., thyrotomy, without tracheotomy, with submucous resection of the growth. This was done in the case cited. There was practically no bleeding with the use of cocain and suprarenal extract. Good exposure was obtained by drawing the wings of the thyroid outward. The perichondrial elevation was very easily accomplished by the introduction of the Killian separator, as is done in the intra-nasal submucous operation. It was then a simple matter to introduce curved scissors and cut out the whole mass. The recovery was even more rapid than in the case reported by Dr. Berens, there being no removal of cartilage, and it was uneventful, without temperature. The healing of the lower portion of the wound took two or three weeks. The man is in perfect health eleven months after the operation, is in active business, his voice is better than that of Dr. Berens' patient, and there is no sign of recurrence. Where there is no infiltration, the submucous method for the removal of intrinsic growths is the ideal method.

Dr. Norval H. Pierce had found the history of total extirpation of the larynx, in his experience, disheartening. Of the eight cases with which he had been identified, all had died within ten days. His experience with partial laryngectomy was somewhat more assuring. The hope of carcinoma of the larynx rests in the early diagnosis, and he doubted whether it is wise for the rank and file of the profession to make a diagnosis by the laryngeal method before laryngofissure. He had known of cases which had gone on to hopelessness as a consequence of such work. In patients over forty, with a suspicious tumor of the vocal cord, be preferred to operate by laryngofissure, rather than by direct or indirect laryngoscopy. The microscopic diagnosis can be made in the operating room, and if the growth prove to be carcinoma, its removal can be best assured by the method of Solis-Cohen, quoted by Dr. Richardson, viz., the subperichondrial method. He had performed this operation in several early cases, all of which had gotten along very well. Chloroform anesthesia without previous tracheotomy was employed. The speak-

er asked Dr. Berens what method he used in closing the anterior incision.

DR. WOLFF FREUDENTHAL said that, as a rule, the total removal of the larynx is quite unfavorable, though Dr. Gluck, of Berlin, presented some very good results at Budapest. In those cases both sides were affected. Too much intra-laryngeal work has been done, and in his opinion, as soon as the diagnosis of carcinoma has been made, the larynx should be opened. He recommended tracheotomy in such cases, even in well-regulated hospitals, as the danger of edema is very great.

DR. WENDELL C. PHILLIPS, referring to the ultimate results of the operation described by Dr. Berens, gave the subsequent history of a case which he had reported twelve years ago. The patient, a man, had what appeared to be a fibroma of the vocal cord. He removed the growth intra-laryngeally, and upon examination, it proved to be epithelioma. A partial laryngectomy was then performed. The man had pneumonia following the operation, but recovered, and returned to his work. After about one year, it was found that a loose flap of mucous membrane which waved up and down in the larynx caused considerable difficulty in breathing. This was rounded out under local anesthesia, and the night following the operation the patient was seized with sudden edema, having barely strength enough to ring for assistance. The nurse responded, the house surgeon was called, and a tracheotomy was quickly performed. He recovered promptly, and had no further trouble until a year and a half ago, when he had a recurrence of the loose membrane in his laryngeal space, which so interfered with his breathing that it was necessary to put in a tracheotomy tube. At present there is apparently a hard tumor in the deep tissues of the neck which presses upon the trachea. About three months ago he began to have difficulty in swallowing, and at the present time cannot swallow at all. An attempt was made to introduce bougies, but without success. Two months ago a gastrostomy was performed, so that he now breathes through one tube and feeds through another. The patient is 72 years of age.

Laryngitis Dolorosa. By W. FREUDENHAL, M. D.

The term laryngitis dolorosa is applied as a symptomatic designation for many affections, all of which have the one symptom in common, viz., attacks of severe pain. Since pain is the only symptom under consideration in the present communication, and since

this occurs most often and severely in ulcerative process of the larynx, the author confined his remarks to tuberculous, syphilitic, carcinomatous, and diabetic ulcers, most of his attention being devoted to the tuberculous. While ulcerations of the larynx, of whatever origin, may be treated on similar lines locally, in order to relieve pain, yet there seems to be a difference in regard to certain applications. The local treatment of these cases may be intra-laryngeal or extra-laryngeal. Laryngeal rest has long been recommended by the author in cases with infiltrations of the larynx, treatment of any kind being of little value. If, however, these infiltrations break down and ulcerations appear, then the pain often begins, and the method of treatment is much more difficult. The requirements of any treatment are: 1. To stop the cough which originates in or near the larynx. 2 To remove the dysphagia. 3. To seek to effect a cure by local applications.

In such cases, following the work of Krause, the author for years employed lactic acid, for the want of something better. He has now entirely discarded it, except after thorough curettage. A new astringent omorol (Heyden), an albuminate of silver, has a distinct penetrating action, and in some cases is very efficacious. It is not soluble in water, and must be employed as a powder.

When a deeper caustic effect is desired, it is best to use the galvano-cautery, as proposed by Ludwig Grünwald, of Munich. The author employs the galvano-cautery occasionally, and is inclined to recommend it for certain cases, at the same time cautioning against severe cauterization at one sitting. He cited a case in his own practice in which a very unpleasant edema followed extensive cauterization in the larynx.

More important than the application of caustics, is the production of analgesia of the larynx by drugs, thus enabling the patient to take solid as well as fluid foods. For this purpose cocain was formerly employed, but other drugs, notably orthoform, anesthesia, propaesin, may be used; the last-named being preferred by the author. Dionin applied directly to the laryngeal ulcerations, has been recommended, but not tried by him.

In cases in which the diseased part cannot be reached, as in a flattened epiglottis, when the ulcer is located on its lower surface, or on the posterior wall of the larynx, or in the trachea, injection of alcohol may be used with benefit, as first suggested by Rudolph Hoffman, of Munich. He recommends 85 per cent alcohol, of a temperature of 45° C. about 112° F. After the subsidence of the initial pain, which may be quite severe, another injection is made.

A strong needle should be employed for the injection, the patient being instructed neither to swallow nor to talk until the procedure has been completed. The place where the superior-laryngeal nerve penetrates the membrana thyro-hyoidea is located with the finger from the outside, with the patient on his back, and the larynx pushed toward the affected side. The most painful spot can be determined with the finger, and here the injection is made. Three cases of a series of 10 or 12 were cited in which this method was employed by the author with advantage. The analgesia thus produced generally lasts from three to eight days.

The third method of treating laryngeal conditions of tuberculous origin is by thyrotomy or laryngotomy, a method which is practically new. Three cases were cited which he had treated by this method.

From the limited experience with this operation, it may be concluded that while the procedure may be unsuccessful in hopeless cases where it is employed as a last resort, in other instances it will tend to prolong life and open the pathway to final recovery.

The question of thyrotomy in cases of carcinoma of the larynx is an entirely different one, upon which the writer had nothing to add.

DISCUSSION.

DR. B. R. SHURLY asked if these cases had any pulmonary lesion. The procedure in the larynx is decidedly modified by the presence of pulmonary lesions, some variety of which had existed in practically every case which he had encountered.

DR. JOHN A. THOMPSON called attention to the use of monochlorphenol, not mentioned by Dr. Freudenthal, which gives more relief in advanced tuberculosis than anything he has ever tried. It is used by direct intra-tracheal injection. The preparation made by Merck is soothing, whereas some of the others are irritating.

DR. ROBERT C. MYLES expressed his personal indebtedness to Dr. Freudenthal for some of the preparations which he had proposed, especially the orthoform and egg combination. This should be rubbed in thoroughly and freely by means of a long, curved, cotton-tipped applicator. In some cases he had seen the pain and swelling entirely relieved by this method.

DR. HUBERT ARROWSMITH called attention to Dr. Yankauer's dropper to be used in the cases under consideration.

DR. FREUDENTHAL, in closing the discussion, said in answer to Dr. Shurly's question, that there is always some pulmonary lesion present, particularly in very far advanced cases. He would be

glad to try the monochlorphenol mentioned by Dr. Thompson. He had used Dr. Yankauer's instrument, or rather had given it to patients to use when they could not come to the office for treatment, but for the physician himself, any ordinary syringe is preferable. Dr. Myles had good results from rubbing the emulsion into the tissues because he reached some ulcerations which otherwise could not have been reached.

Vincent's Angina, Involving the Larynx Exclusively. By H. ARROWSMITH, M. D.

The purpose of this communication was to put on record a case which seemed unique in the history of the disease. The patient, male, 26½ years of age, presented himself at the author's clinic at the Brooklyn Eye and Ear Hospital, August 27, 1909. During the previous week he had experienced a deep-seated sensation of discomfort in the throat, with gradually increasing hoarseness and dyspnea; the latter was pronounced at the time of admission. Physical examination of the thorax was negative, pulse and temperature normal, respiration decidedly embarrassed. There was slight swelling of the neck externally. Laryngoscopy showed edematous swelling of the epiglottis, arytenoids and ventricular bands. His condition was so serious that he was sent to the ward for observation. About twenty-fours hours after admission, his dyspnea became so urgent that the house surgeon was obliged to do a hurried tracheotomy. This entirely relieved the laryngeal symptoms. The tube was removed after four days and the tracheal wound was completely healed by the third week. There was nothing of moment in the laryngoscopic picture, beyond a slight tumefaction of the epiglottis and the ventricular bands. His voice had recovered its usual tone and the discomfort and dyspnea were completely relieved. He was discharged, but returned October 4, with recurrence of the hoarseness, dyspnea and swelling of the soft tissues of the neck. The skin incision had re-opened and was discharging very foul-smelling pus, which had collected in the peri-tracheal soft parts. Several small abscesses were incised and a considerable amount of pus liberated. The pus from these suppurating tracts was found to contain immense numbers of fusiform bacilli and spirilla of Vincent. The sputum, owing to a misunderstanding, was not examined at this time. On October 10, his dyspnea demanded a second tracheotomy, and smears from the interior of the trachea showed almost a pure culture of the specific germs, as did also the sputum obtained by coughing. A blood-count showed a moderate anemia.

Urinalysis: Trace of albumin, no sugar, indican in excess, a few casts. During the ensuing six weeks, frequent examination of the sputum, tracheal secretions and granulation tissue from the tracheal wound, showed almost pure cultures of the spirillum and fusiform bacillus, at times mixed with pneumococci, staphylococci and streptococci. As the symptoms showed no amelioration, on November 5, thyrotomy was performed and a Jackson's laryngostomy tube inserted for the purpose of keeping the larynx open for topical applications and with the hope of averting future deforming cicatrization. When the larynx was split, a mass of friable, cheesy exudate was removed which teemed with the specific germs. Beneath this exudate, the mucous membrane was eroded and bled easily, and in spots the bare cartilage could be felt. A thorough anti-syphilitic course

of medication was instituted without benefit. A Wassermann test after the Noguchi method gave absolutely negative results. During an illness of the author, the laryngostomy tube was removed and the tracheotomy tube reinserted on November 19. When he again saw the patient, the thyrotomy wound had closed down to the tracheal opening. About December 1, patient had almost complete suppression of urine, with decided symptoms of uremic poisoning. By the middle of December, the fusiform bacilli and spirilla had practically disappeared from the sputum and secretions, and cicatricial contraction had produced marked stenosis of the larynx. For more than a month daily attempts were made to dilate the larynx with Schroetter's tubes, but it was never possible to introduce the fourth tube in the ascending scale. The larynx now admits

a fair-sized goose-quill, but its structures are thickened and rigid. On account of the condition of the kidneys, it was not thought wise to subject the patient to further operative procedure. It would have been interesting to determine whether the primary seat of infection had been within the larynx or the trachea, or in the peri-tracheal aveolar tissue.

As a complement to the above case, the author reported a second in which the infection with fusiform bacilli and spirella of Vincent was implanted upon a pre-existing laryngeal tuberculosis.

Dr. Norval H. Pierce said Dr. Arrowsmith had undoubtedly had unique experience with Vincent's angina, not only as reported in the present paper, but in one or two papers in the past. The speaker had never seen a case such as Dr. Arrowsmith reported. The presence of Vincent's spirillum or the fusiform bacillus in an ulceration of the mucous membrane of the upper air-tract does not mean that the pathological process is due to that organism. In this connection he cited a case reported by Koenig, of Paris, which was diagnosed Vincent's angina. It went on until perforation occurred, and, despite a negative Wassermann, healed up immediately upon the administration of anti-syphilitic medication. He also cited a case which had come under his observation in Chicago. A young man brought his wife in for an opinion, giving no previous history. Upon examination it was found that there was infiltration and ulceration of both posterior pillars and the upper part of the tonsils, rather symmetrical; stiffening, swelling and infiltration of the soft palate, so that the patient had a nasal voice. Examination of the nose revealed posteriorly a pronounced swelling and infiltration, which occluded the view of the inferior meatus. The diagnosis of syphilis was made. Such a possibility was vigorously denied, and the husband then told that the patient had been under treatment for a month for Vincent's angina because at every examination swarms of the fusiform bacilli and of Vincent's spirillum were found. It was finally agreed that anti-syphilitic treatment be instituted. This was done, and after a short time everything healed up, with perforation of the palate and of the anterior pillar on one side. The Wassermann test had been made in this case and was negative. The spirochete of syphilis had not been looked for. Emphasis was laid upon the great danger of mistaking syphilis for Vincent's angina, the organisms of which, in his opinion, do not cause perforation of the cheek and palate. Undoubted syphilitic lesions may contain these organisms in great numbers. No examination is complete in these cases until a search has been made for the spirochete in the

local ulceration and a Wassermann test made. If such cases have resisted local treatment for weeks, it is always good practice to give anti-syphilitic treatment, even though the Wassermann test and the search for spirochete result negatively.

DR. TALBOT R. CHAMBERS called attention to the fact that the Wassermann test may be negative when syphilis is present; the accuracy with which the test is made having so much to do with the result. He had had two or three cases similar to those cited by Dr. Pierce.

DR. NORTON L. WILSON sounded a warning-note with reference to the association of some of the cases under consideration with tuberculosis. Tuberculous cases, if given iodide of potash, do very badly, and one should therefore be very positive in the diagnosis before instituting anti-syphilitic treatment.

DR. D. BRADEN KYLE agreed with Dr. Pierce. He cited one case, among a number previously reported, in which the spirillum had been demonstrated, which did not yield to the iodides, but which responded readily to mercurial inunctions. This was undoubtedly a case of syphilis, though the germ of syphilis was not found. Just what the presence of the spirillum signified he did not know. Ulceration in the membrane which forms on the palate and sometimes along the cheek is rarely found. There is nearly always some swelling in the thyroid region. In the only two cases of true Vincent's angina which he had seen the thyroid gland was swollen and there was cellulitis in the neck.

DR. ARROWSMITH, in closing the discussion, said that anti-syphilitic treatment, as well as the Wassermann test, had been employed in all the cases he had reported. He took issue with the remarks of Dr. Pierce concerning the non-association of the germs with the disease. There is nothing in syphilis that looks like Vincent's angina in the early stage. The exudate is characteristic, as is likewise the appearance of the adjacent parts. The ulceration in Vincent's angina begins a short time after the commencement of the exudate, and looks not at all like that of syphilis. In the former cases there is at times a tremendous loss of tissue and the formation of a great deal of cicatricial tissue.

TORONTO ACADEMY OF MEDICINE.

SECTION OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY.

December, 1909.

DR. R. A. REEVE, CHAIRMAN.

PRESENTATION OF CASES.

Ear Case for Diagnosis. By PERRY GOLDSMITH, M. D.

Case of young man with almost total occlusion of the external auditory canal, due to fibro-cartilaginous or inflammatory overgrowth. The Doctor intends to allow the swelling to subside and then to do a radical operation.

DISCUSSION.

DR. WISHART thought that the pit over the mastoid tip on one side was most probably due to retraction after removal of the bony tip. The facial paralysis in this case was interesting as a radical operation had not been performed.

Papilloma of the Nose. By PERRY GOLDSMITH, M. D.

Hypertrophic Folds in the Mucous Membrane of the Septum Mistaken for Spurs. By PERRY GOLDSMITH, M. D.

Case of Frontal Sinus Disease. By J. PRICE-BROWN, M. D.

This case had already been reported and was shown to the Section so that the members might note the present condition. Two and a half years had elapsed since the doctor did a radical operation by which a running discharge from the site of a former operation beneath the eyebrow had been cured. The patient was under observation after recent removal of a synechia that had formed in the corresponding nasal cavity, and which was in process of healing. During the interval of over two years since the operation upon the sinus no treatment had been required.

DISCUSSION.

DR. GOLDSMITH thought the case an interesting one. The diagnosis in his opinion was not quite clear. Evidently there had been a frontal periostitis due to sinus disease, frontal or ethmoidal. Removal of dead bone had allowed the inflamed wound to heal. Drainage into the nose he thought still imperfect. He would resect the

septum so as to drain better and if necessary curette the ethmoid cells. Of course, if the discharge was slight, and the patient satisfied, he would let well enough alone.

DR. WISHART congratulated Dr. Brown on the cosmetic effect as there was no deformity and the scar was very slight; but as there was some pus in the nose, he considered this objectionable. He thought more space in that nostril was essential. The pus probably came from the anterior ethmoid cells for which a Killian's operation or a modification of it offered the best results.

DR. REEVE, who had assisted at the operation thought that the anterior ethmoid cells were well cleaned out at the time.

DR. STEWART did not believe that external operations upon frontal sinus cases should be undertaken too lightly. He would first remove the middle turbinate. This gives good drainage and in most cases is sufficient.

DR. PRICE-BROWN, in reply, said that prior to the operation on the sinus, he had removed the anterior end of the middle turbinal, and also the lower half of the inferior turbinal, as that side was almost completely occluded. The anterior ethmoid cells were also partially removed by drill as noted by Dr. Reeve. The present defective space and drainage were due to the irritation caused by the removal of the synechia and would be of a temporary character. As this receded, he believed the space would be ample for drainage and ultimate cure without further operation.

Cases of Nose, Throat and Ear Disease which Produced Orbital Symptoms. Reported.

DISCUSSION.

DR. STEWART quoted one in which there was swelling of the inner angle of the orbit, accompanied by optic neuritis and blindness on that side. On removing the middle turbinate, which was cystic and obstructed drainage, there was a gush of fluid from the fronto-ethmoidal cells, giving relief to the prominent symptoms.

DR. MCCULLOUGH had seen two cases of suppuration of the ethmoid associated with optic neuritis. He had also seen two cases of nystagmus with involvement of the semi-circular canals.

DR. COLIN CAMPBELL read notes of two cases of recurrent iritis of such frequency as to cause disability. In one of these there was blindness for a year. Both had septic tonsils. After complete tonsillectomy there had been complete cessation of iritic symptoms.

DR. REEVE quoted a case in which he had operated for cataract. Some time later the patient developed a follicular tonsillitis, which

was followed by a violent iritis in the eye he had operated upon. The tonsil on that side was removed. Some months later tonsillitis in the remaining tonsil occurred which was at once followed by a fulminating iritis in the corresponding eye. Removal of the tonsil prevented further attacks. He always examined the tonsils in iritis of obscure origin. He knew also of cases of asthenopia which owed their origin to the pressure of carious teeth.

DR. ROYCE quoted cases in which after mastoid operations, the cap of the horizontal semi-circular canal having been removed, there was horizontal nystagmus.

January, 1910.

PRESENTATION OF CASES.

Mastoid Operations with Healing by Blood Clot. By PERRY GOLDSMITH, M. D.

The only complication in this case was a slight facial paralysis ascribed to exposure. The doctor had been unable to find any antrum, but suppuration within the labyrinth was dealt with.

Adenoids and Tonsils. By T. ALEXANDER DAVIES, M. D.

The writer reviewed some interesting historical facts, showing that history may be said to repeat itself even in the surgical world.

Czermak, in 1860, was the first to observe and describe adenoid enlargement in the naso-pharynx, and the term "adenoid vegetation" was first applied by William Meyer, of Copenhagen, in his exhaustive treatise in 1868. A thorough curettage with a Gottstein curette or suitable modification of it was the method of operating advocated by the writer, stress being laid on a careful selection of the size of the curette-blade which should be as long as the pharynx is wide.

In Ballenger's new work, published last year, on the subject of "Tonsils and Adenoids," his radical methods are much in evidence; that this is no new departure from that of old famous surgeons can be shown by reference to the work of Celsus, who, in A. D. 10, advised removal of tonsils by enucleation with the finger or by means of hook and scalpel. Aetius, in A. D. 490, Paul Aegina in 750, and Albucasis in A. D. 1120, advise similar operations. After that the operation seemed to fall into disuse, and in 1509, the dread of removing the tonsils was so great that Paré advised tracheotomy when serious enlargements of tonsils existed and gave a hint of ligaturing the hypertrophied glands but made no remark as to their excision. Dionis, in 1672, recognized a physiological import-

ance in the glands, and condemned any kind of removal. Heister, in his popular text-book in the eighteenth century, said this operation was not only too severe and cruel, but also too difficult of performance to come into practice among the moderns, because of the obscure situation of the tonsils. It was not until the latter half of the eighteenth century that tonsillectomy became a recognized surgical procedure and from that time operators began to improve instruments and invent new ways of performing the operation. Scissors were first used by Louis, in Paris, in 1774, and to-day are used in a modified form in Robertson's operation. To Benjamin Bell in America, in 1783, we are indebted for the tonsillotome, which was simply an enlargement of the uvulatome invented by Dr. Bell. Dr. Physick, of Philadelphia, was the first to use the tonsil guillotine and it is this instrument, with some slight modifications, which we to-day call McKenzie's tonsillotome. Fahnestock, of Lancaster, Pa., in 1832, devised an instrument which he called a "sector tonsillarum." Guersane, of Paris, 1864, altered the shape from circular to elliptical, and on the suggestion of Veldeau, added the forks. With some slight modification, this is the Mathieu tonsillotome so frequently used to-day, but often with eventually unsatisfactory results.

The radical methods for the extirpation of the doomed tonsils advocated by our Chicago confrères, seem to be taking a firm hold on many of our practitioners, if one can judge from the statement of one of our leading instrument dealers who says he has sold more tonsil knives in the past six months than he has sold in three years previously. Will there be a reaction, just as there was in the sixteenth century?

DISCUSSION.

DR. PRICE-BROWN thought that the removal of adenoids in children and adults called for different methods of operation. He approved of the advocacy of curettage in removing adenoids; but as one could never see the field while operating on children, he always used the digital nail as well, particularly to clean out the tubal tonsil from the fossa of Rosenmüller. In fact, in very young children, he frequently did the operation with the digit alone, under general anesthesia. In adults, the operation being done under local anesthesia, and direct observation of each step of the operation being obtainable, he depended upon the curette.

In children the enlargement of the faucial tonsils, when it was simply hypertrophy of normal tissue, demanded only reduction ap-

proximately to normal size. He believed that complete tonsillectomy in these cases was uncalled for, as during child-life the gradual enlargement and recession while in a normal condition proved that they had some distinct physiological function to perform which should not be interfered with. In adults, when the tonsils were diseased, he would remove them intact, as their functional activity is passed.

DR. TREBILCOCK coincided with the opinion that the first duty of the pharyngeal surgeon is to prevent too much pharyngeal surgery.

DR. REEVE asked if the tonsil might not have a function to perform in furnishing some internal secretion. He had never practiced entire tonsillectomy, and questioned the wisdom of complete removal.

DR. BELL coincided with Dr. Reeve's opinion.

Pathology and Treatment of Alveolar Abscess. S. L. MCCURDY, *Jour. A. M. A.*, Oct. 8, 1910.

S. L. McCurdy believes that dentists should realize the seriousness of the most frequent operation they perform, namely, that of devitalizing and extracting pulp, since infection and serious bone destruction arise from this source. The symptoms are well known to all, and, especially if complicated with syphilis, may be very uncomfortable. Destruction of the bony floor of the antrum does not necessarily mean perforation of the membranous floor or infection. An alveolar fistula leading into a cavity containing a considerable portion of the tooth requires extraction of this tooth before recovery can be obtained. Persistent headaches and general reduction of health are frequently caused by very insidious alveolar abscess. He thinks it desirable, in case of necrosis of the mandible calling for removal of bone, to establish drainage through the chin and approximate the gingival margins with sutures so as to shut off the pus cavity from the mouth. Naso-oral fistula, which sometimes occurs, especially in syphilitics, can be cured after due constitutional treatment by a membranous flap from the roof of the mouth. Tincture of iodin is recommended in all suppurative conditions of the mouth as a disinfectant.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

March 22, 1910.

GEO. E. SHAMBAUGH, CHAIRMAN.

Exhibition of Apparatus for Improved Ether Anesthesia. By EDWIN PYNCHON, M. D.

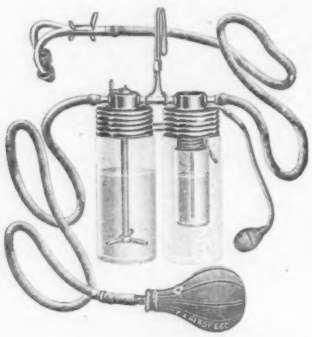
Dr. Edwin Pynchon exhibited an improved vaporizing device for ether anesthesia on the principle of the Junker inhaler, consisting of two, ten-ounce bottles, one being for ether, while the other serves as a mixing chamber, and prevents any fluid ether being carried to the patient. Air is forced through the ether by means of a rubber hand-ball, though, by aid of a lever on the top of the ether bottle, the proportion of entering air which is caused to pass through the ether can be regulated, and thus the per cent of ether vaporized varied as required by the degree of the patient's anesthesia.

The patient is first anesthetized with the mask in the usual manner; then a change is made to the inhaler as the operation is begun. After vaporization, the etherized air, by its circulation in the mixing bottle, and passage through the rubber tube leading to the patient's nose, is materially elevated in temperature. This tube ends in a Y-shaped tip provided with two conical hard rubber plugs, so that both anterior nares are tightly plugged, and thus through the physiologic action of the nose, the etherized air is both humidified and further elevated in temperature to that of body-heat before reaching the lungs. In this way the anesthetist can easily maintain the required degree of anesthesia, thereby avoiding the great disadvantage of interrupted administration, as occurs with the mask, and he is furthermore at no time in the way of the operator. The air current supplied by the hand-ball is intermittent and its motion is timed with the patient's inspirations. Being forced to enter the rear part of the mouth from behind the soft palate, it is delivered at the most favorable point for inhalation.

In the mixing bottle is suspended a smaller bottle containing chloroform. By slightly compressing a connecting small rubber-ball, the air above the chloroform is condensed so that a few drops thereof are caused to rise through an escape-tube and can be delivered in the outer bottle at any time when required. At all other

times the etherized air passes about this bottle without absorption of chloroform.

During the use of this device, which was designed principally for operations in the mouth and throat, the patient is in the Rose position, with a mouth-gag properly adjusted. To remove saliva and blood incidental to the operation, aspiration is employed. The tongue is depressed with a depressor held in the left hand of the assistant, while in his right hand he holds the aspiration tip which is, from time to time as required introduced in the back part of the mouth, when suction is caused by a metal air-pump operated by a nurse. In this way, by the combination of the anesthesia inhaler and the aspirator, all of the most desirable features of anesthesia are secured, viz.: Uninterrupted anesthesia which is maintained constantly at the proper degree; avoidance of both re-breathing and



the inhalation of cold vapor; prevention of respiratory arrest by the drawing of fluids in the lung tubes; and lastly, prevention of ether-laden saliva or blood entering the stomach. Thus there is avoided both the feature of vomiting, providing suitable and sufficient preparation has been taken, and also the possibility of post-operative pulmonary complications.

DISCUSSION.

DR. TRUMAN W. BROPHY: The question of administering anesthetics by vaporizing the agent is not new, and the introduction of apparatus of this kind is certainly commendable. Several years ago I began to use Yonker's Inhaler. I found that in the use of the Yonker Inhaler, one day, an interne who was administering the anesthetic, forced some liquid chloroform into the pharynx of the patient, which caused a good deal of trouble for a little while.

This experience suggested to me the advisability of modifying Yonker's Inhaler by adding another bottle, one to hold the anesthetic agent and the other to remain empty to hold any liquid which might be forced out of the first bottle, so as to make the carrying of fluid into the pharynx impossible. I then made one with two bottles and found it was of great value. I made the mistake in having the bottles too small, and made them larger. The apparatus was clumsy. Dr. Pynchon made a modification of it, which he used for some time, as his paper described. It is better than mine in one respect, because it has a more simple attachment of the bottle to the cap. It is a very valuable apparatus for all work within the mouth or nose. It reduces to a greater certainty the mixing of the atmospheric air with vapor. With chloroform it is especially desirable because we always have a certain per cent of cholorform vapor mixed with a certain per cent of atmospheric air. I think this sort of an apparatus, possibly modified will be largely employed in surgery. We know that the average young man coming from the school of medicine has never given an anesthetic. Most patients are anesthetized before they are brought before the class, and when they begin to give the anesthetic, ether or chloroform, the patient is saturated for a little while, and then they stop. With this kind of an apparatus the patient is not in so great a state of danger. I believe if the true history of the fatalities from chloroform were known positively, we would find that they were due more to the manner of giving it than to the agent itself. If the patients were just placed under it they would not be in great danger. I approve of the Doctor's method of first putting the patient under the anesthetic by means of the mask, and then vaporize ether or chloroform slowly, thus maintaining anesthesia. I prefer a foot air-bulb to the hand one because the one who gives the anesthetic may do so without having his hand encumbered with anything except the handpiece. He has one hand to do something else with, possibly use an aspirator. In vaporizing the anesthetic, the patient is all the time getting a little, so the element of danger is diminished to the minimum. Besides, if one wishes to be economical, an apparatus of this kind will reduce the expense of chloroform or ether 50 per cent because so little comparatively is used, and only a small amount lost. The patient gets practically all of it, while with the mask, more escapes than the patient gets. Just recently an article, by Dr. Franz Kuhn, of Kassal, Germany, appeared in the *Medical Recorder,* illustrating an inhaler which is a modification of the two-bottle apparatus, three bottles of the same size being used; chlo-

roform in one, ether in the other, and the third empty. The anesthetist can give the patient ether all the time, or chloroform, or he may mix the two, or he can change off from one to the other. We all know that it is very desirable at times when administering ether, if the patient is not easily controlled, to give a little chloroform. Again, we know that when the patient is taking chloroform, if everything is not going on satisfactorily, we stop the chloroform, and after improvement in the circulation takes place, go on a little while with the ether. Dr. Kuhn's apparatus and his plan of introducing a tube in the larynx ("Peroral Intubation") is a good one.

DR. PYNCHON (closing): Dr. Brophy's experience in producing anesthesia by vaporizing, justifies his speaking with considerable authority. It seems to me that the vaporizing apparatus would be ideal for administering rectal anesthesia. The only change necessary is to have the tube made longer and several coils placed in a dish containing hot water.

Two Cases of Labyrinthine Disease Following Chronic Suppuration. (Cholesteatoma). By N. H. PIERCE, M. D.

(Published in full in the October, 1910, issue of THE LARYNGOSCOPE, *p. 992.)*

DISCUSSION.

DR. FLETCHER: It is difficult to follow the history of the first case. I should judge, however, that there was a fistula in the oval window, as that is the case quite often when they are not found in operation. The circumscribed labyrinthitis becomes diffuse as is shown by the nystagmus shifting to the sound side. It seems to me that that history points very distinctly to cerebellar abscess. There can be a large area of good tissue between the point of entry and the abscess. The section may show it, and it may show a so-called multiple abscess which might be easily overlooked before the section is complete. These abscesses are frequently small and connected by tiny canals. The reason I take this case to be cerebellar abscess is because the patient first had nystagmus to the well side, then more than five days after the operation he developed nystagmus to the sick side. If recurrence toward the sick side takes place within four days after the operation, it may be put down as meningitis. If it is more than four days, it is almost invariably cerebellar abscess. I know no cases and have heard of none which die from labyrinthitis only, even though it is suppurative rather than the serous variety.

In regard to the second case, I should diagnose that as peri-labyrinthitis, suppuration of the pneumatic cells surrounding the bony labyrinth. These cases do get well spontaneously. They are always associated with mastoiditis, but there can be an acute exacerbation of a chronic case of suppurative otitis media which will lead to it. Granulations may be found which interfere with drainage through the antrum. However, cases of serous labyrinthitis are often associated with fistula, that is to say, circumscribed labyrinthitis frequently becomes diffuse serous labyrinthitis. The hearing returns, but the patient continues to have his attacks of vertigo. Fistula was not found and the small a^1 fork was heard. These two points speak against circumscribed and diffuse suppurative labyrinthitis and point to peri-labyrinthitis.

Dr. A. H. Andrews did not see how the rotation of the case reported by Dr. Pierce could in any way be held responsible for the development of the fatal complication. He has seen a case with somewhat similar symptoms, attacks of vertigo, total deafness in the affected ear. The case was operated on and later the labyrinth was cleaned out. Although the patient regained consciousness, he subsequently died. There were no rotation-experiments made here. In both of these cases he is of the impression that we have to do with a well-recognized pathological process extending from the labyrinth into the brain.

Dr. Stubbs: Dr. Pierce's second case reminds me of a case I had about a year ago, and it might be worth mentioning for this reason, that immediately following the waking up from the operation the patient had intense vertigo and nystagmus, both rotary and horizontal. He was a young lad about 18 years old, who, for 10 or 11 years had a running ear, and just before leaving England, he consulted a doctor for headache. The doctor gave him some medicine, and told him it was neuralgia. The headache continued to localize towards the mastoid process, and he arrived at Chicago one week after arriving in New York with a swollen mastoid very similar to the appearance you see in an infant. I saw him the next day and told him it would be necessary to operate for cholesteatoma. The history showed nothing more than a slight tenderness over the mastoid, with a discharging ear, and the headache was more of a neuralgic character. On operating, I found one of the most extensive cholesteatomata I have even seen. The labyrinth projected high up into the field of operation, and the other parts of the bone had been excavated. I could find no evidence that

the process had invaded the inner-ear, and treated it as an ordinary case; but, as I say, the patient on awakening had this intense vertigo and nystagmus. The relatives thought he was going crazy on account of the intense nystagmus. I left the city that afternoon for three days. On the third day, after removing the packing, within a few hours the nystagmus and vertigo had all disappeared. From that time on he made an uneventful recovery. I feel like mentioning the case on account of the symptoms which were removed by relieving the packing. Whether that was peri-labyrinthitis or whether the pressure of the packing caused the increased labyrinthine pressure is hard to say, but not seeing the case for three days, I was relieved of a great deal of worry, and was lead to conclude that one can safely avoid worrying about these cases following an operation if the temperature remains normal and no other symptoms indicate severe sepsis. At least, first re-adjust the dressing.

(*To be Continued*).

How Far is Heredity a Cause of Aural Disease? B. ALEXANDER RANDALL. *Am. Jour. of Med. Sci.*, July, 1910.

The author combats the claim of some authors as to hereditary influences in ear diseases. He considers the subject of great practical importance, because it leads otologists to refrain from attempting the treatment of cases which they consider foredoomed to failure, and also causes many persons to labor under the erroneous impression that there is no use in their seeking relief. Much more evidence might easily be adduced to show that heredity may play an important part anatomically to facilitate or to decrease the tendency to ear disease. Dr. Randall thinks the assumption of inherited narrowness of the fenestral niches, as a factor in the fixation of the stapes and round window membrane, lacks confirmatory observations; the claim that spongification of the labyrinth walls has its beginnings in embryonal life is similarly weak; and while Bezold claimed heredity for 52 per cent of his otosclerosis cases, most of the students of the matter admit far less. PACKARD.